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The Housing Industry:
Perspective and Prospective

Summary Report
The Changing Housing Industry in Canada, 1946-2001

Canada

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Perspective and Prospective

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The Changing Housing Industry in Canada, 1946-2001

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Although the final version of this summary report benefited from the reviewers' comments, the authors bear sole responsibility for its contents.

EXECUTIVE SUMMARY

In the more than 40 years since the end of the Second World War, Canadians have become one of the best-housed peoples in the world. A number of inter-related factors have contributed to this enviable record. One of the most significant has been the evolution of a capable and mature housing industry.

Notwithstanding this record of accomplishment, relatively little information exists on the producers of housing in Canada. The circumstances facing the housing industry today are changing dramatically, and the need has become evident for a clearer view of the industry, its evolution over the postwar period, the ways in which it adapted to change and the ways in which it might adapt in the future.

This study addresses these concerns. Funded by Canada Mortgage and Housing Corporation (CMHC), and undertaken by Clayton Research Associates Limited and Scanada Consultants Limited, the study consists of five working papers, a full summary report and this executive summary.

OVERALL CONCLUSIONS

This study examines the characteristics and production processes of the housing industry and its four components: single-family homebuilders, residential land developers, apartment developers and residential renovators. It highlights the history of the housing industry in the 40 years after the Second World War and how the industry is expected to change from the mid-1980s to the end of the 1990s. From this exhaustive review arise several conclusions of interest to decision makers in both the housing industry and various levels of government.

■ The nature of the housing industry is the creation of its product and market environment.

The housing industry, in particular the single family homebuilding and renovation sectors, is characterized by the conspicuous absence of very large firms operating on a national basis. However, the structure of the industry does vary by market area.

The existence of a large number of small firms in the single-family homebuilding and renovation sectors reflects the ease of entry into the industry that prevailed over the entire postwar period, the fragmented nature of housing demand and the fact that the housing product is tied to specific sites.

Structural differences between market areas reflect in large part local market differences, such as variations in land ownership patterns or in the regulation of the building and land development processes.

The fact that on-site construction is still a primary characteristic of the housing construction process is largely a reflection of the market environment and the resulting industry structure.

■ The housing industry is highly responsive to changes in market conditions, but much less so to technological change.

The housing industry's inherent structure has proven highly adaptable to changes in its marketplace through times of expansion and contraction. However, these same attributes contribute to a lack of vigour in most firms in the housing industry in the pursuit and adoption of desirable technological change.

■ Advances in the housing industry over the past 40 years have been the result of a strong partnership between the private sector and government.

At the federal level, the role of CMHC has been central to the development of a modern housing industry. This relationship was especially critical in the early postwar years, when the industry was still in the adolescent phase of its development.

A reliance on the private sector and the powerful incentive of the profit motive, guided by government through building codes and regulations, has provided Canada with one of the highest standards of housing in the world. The federal government and, increasingly, provincial governments have used the private market to produce housing in the quantity and types affordable to a broad spectrum of Canadians. Governments have occasionally exercised a stabilizing role during times of economic difficulty.

Governments have established the framework for the provision of quality housing, but generally have not built the housing. In addition to creating the framework for the functioning of the private market, governments in Canada have played a significant role in financing housing for low-income people whose housing needs are not usually met by the private market. In such cases, the private sector generally constructed the housing.

- The housing industry is in a state of transition.

The housing industry will not need to produce as many new housing units as it has in the past unless population growth trends change dramatically through substantial increases in immigration. While the markets for new housing are expected to shrink, they will also become more discrete. The housing industry must develop enhanced capabilities to identify and cater to these newly emerging markets, which include a diversity of "lifestyle" housing forms.

Similarly, the housing industry must develop the capability to respond to the emerging economic importance of the renovation sector. As the century comes to a close, much of the country's housing stock will require upgrading. This presents the opportunity for a great deal of labour-intensive work, which, to a considerable extent, could replace that lost through the expected decline in new construction. Upgrading will also entail the development of an industry with a different mix of skills from that required for new construction. In many ways, renovation activity poses challenges similar to those faced in the early postwar years, when a great need existed to stimulate the production of large volumes of low-cost new housing.

- Land supply is the most complex factor of production.

The production of serviced residential land is the only factor of production in the homebuilding process not directly responsive to market forces. The price mechanism works only indirectly in the land market. The provision of trunk services to developing areas is largely a function of municipal and provincial governments, while the planning and development of new subdivisions occurs principally in the private sector.

Although landowners and developers are enticed to bring more developments to the market when demand and profit expectations are high, they cannot do so unless the trunk services are already in place and without the extensive cooperation of municipalities and, often, provincial governments in the review and approval of their plans. Typically, the actions of municipalities are not directly responsive to the signals of the price mechanism. Hence, the municipal response to rising demand for serviced residential land tends to lag behind the response of private-sector landowners and developers.

DETAILED CONCLUSIONS

The more detailed conclusions of the study are presented here under headings that correspond to the chapters in the main text of this report.

The Housing Market Context

- The postwar demand for new housing peaked in the mid-1970s. Although the late 1980s represent a temporary reprieve from a long-term decline in demand, the decline is expected to resume in the 1990s.

- The future demand for new housing is closely related to future levels of immigration to Canada. On the whole, sharply higher immigration would significantly increase the anticipated level of demand for new housing.

- Canadians have exhibited a strong preference for homeownership, a preference expected to continue through the 1990s.

- Increasingly, new home buyers in Canada will opt for lifestyle housing, as a growing proportion of new home buyers are drawn from non-traditional buyer groups such as empty nesters and seniors.

- The average size of new single-family homes is expected to decline in the 1990s, but the "intelligence" of new houses will likely increase.

■ The level of renovation activity undertaken on the stock of existing ownership housing in the 1990s is expected to continue the rapid upward trend that began in the 1970s; however, a corresponding increase in the volume of renovation spending on the rental stock may be inhibited in those provinces that have rent controls.

■ No major revolution in the housing production process is expected in the 1990s. However, computer-aided design (CAD) is expected to increase in popularity, especially among larger builders specializing in lifestyle housing and among renovators.

The Single-family Homebuilding Industry

■ The single-family homebuilding industry has shown a high capability for adjusting to its changing marketplace.

■ The single-family homebuilding industry continues to be characterized by a large number of small firms building fewer than 25 houses per year, a much smaller number of medium-sized firms building 25 to 99 homes per year and only a handful of large firms building 100 or more houses per year. Large builders play a more prominent role in selected large urban markets, including Toronto, Ottawa and Winnipeg.

■ The existence of a large number of small builders suggests an absence of substantial economies of scale. The structural differences between market areas reflect, in part, local differences in land ownership patterns and the regulation of the building and land development processes.

■ The financial returns from homebuilding are closely related to market conditions and the competitive environment. Generally, homebuilding was financially attractive in the mid-1970s, but has been much less attractive during the first half of the 1980s.

■ It is expected that a substantial number of builders will leave the single-family homebuilding industry over the 1986-2001 period. It is also expected that large firms will gradually increase their share of the market and that medium-sized builders will increasingly become specialists in particular market niches or become more like general contractors, working for developers of planned lifestyle developments.

Production Process of the Single-family Homebuilding Industry

■ While changes in the form of new single-family houses have been moderate over the postwar period, with the possible exception of the average size of the house, there have been significant changes in the material of these houses: basements are now insulated and preserved wood foundations have gained popularity; roof trusses have supplanted traditional joists and rafters; the traditional 50 by 100 mm (2 by 4) stud frame is being replaced with 50 by 150 mm (2 by 6) framing; in many areas waferboards have largely replaced plywood in sheathing walls, roofs and subfloors; prefinished, low-maintenance wall cladding materials, initially aluminum and hardboard, but, increasingly, vinyl sidings, have gained greater market share; the overall window glass area has grown; new standards for windows have improved airtightness; insulation standards have improved significantly; trims have become plastic-clad or rigid plastic in many cases; and electric service is now typically 150 A.

Moreover, synthetic materials have made considerable inroads in all aspects of housing construction, from the glues used in the manufacture of waferboard and plywood to paints, insulation material, vapour barriers, carpeting, coatings, prefinished trim and piping for drains, waste and vents.

■ Changes in the homebuilding process over the postwar period were largely evolutionary, but cumulatively these changes have had considerable impact. The increased use of factory-built materials and components resulted in significant productivity improvements in on-site labour, especially in the first two decades of the postwar period.

■ Entirely factory-built housing has never been accepted in the mainstream single-family homebuilding process, except perhaps for mobile homes in the early 1970s. One reason for the lack of acceptance was that municipal regulations constrained sufficient production volumes in the first two postwar decades, when interest in factory-built housing was most intense. A second factor was that potential savings over on-site construction were not substantial.

■ Several changes are anticipated in the single-family homebuilding production process by the end of the century: the process will continue to become more factory-based; the types of products used for wall and roof claddings will expand to include wood-fibre materials, metal, vinyl and lightweight concrete; the use of preserved wood foundations will increase; framing and stressed-skin panel assemblies will increasingly be produced in wood-composite sections; house systems will allow for the inclusion of "smart house" circuitry; heating, ventilating and cooling systems will more often use heat-pump heat-recovery from exhaust air; exports of wood-composite housing components to the United States will increase.

Industry Characteristics and Production Processes in the Remaining Sectors of the Housing Industry

Residential Land Development Industry

■ The residential land development industry has undergone a major transformation in many market areas over the postwar period. It has changed from an essentially municipally operated industry to a private sector industry.

■ The structure of the land development industry has tended to become more concentrated over the postwar period, though this is not an attribute of every major market area. Generally, this concentration does not seem to have reached levels allowing monopolistic behaviour.

■ The residential land development business has been extremely profitable at times, but is risky.

■ The role of larger land development firms is expected to continue to increase throughout the rest of the century.

■ The configuration of both the typical residential lot and the subdivision has changed dramatically over the postwar period in an effort to make more efficient use of land.

■ Little change is expected in the process by which serviced residential lots are produced over the 1986-2001 period.

Residential Apartment Development Industry

■ The size and structure of the apartment development industry over the postwar period have largely reflected underlying market conditions and the degree of involvement of government in the marketplace.

■ The apartment development industry has experienced a number of changes over the postwar period, evolving from developers building for their own rental portfolio in the late 1950s to the late 1960s, to rental syndicators active in the late 1970s and early 1980s, to increasing numbers of condominium apartment developers in the mid-1980s.

■ The shift in preferences of the housing marketplace to more lifestyle living environments suggests that larger firms will continue to play a significant role in the apartment development industry.

■ The characteristics of apartment buildings have broadened over the postwar period, though regional differences exist. Apartment buildings changed from the exclusively walk-up structures of the mid-1940s to late 1950s to more medium-rise structures in the mid-1950s. Since the early 1960s, high-rise structures have become a common form of new apartment accommodation.

■ New construction equipment, such as tower cranes, and new techniques, such as flying forms, introduced in the 1960s, contributed significantly to the development of high-rise apartment technology.

■ European building systems for apartment construction failed to find a significant market in Canada in the 1960s despite several efforts to introduce them.

■ No major changes are expected in high-rise apartment construction technology before the end of the century.

Residential Renovation Industry

■ The residential renovation industry is the newest recognized sector of the housing industry. While renovation work has always existed and began to expand rapidly in the early 1970s, only in recent years have the firms involved come to be regarded as an industry.

■ In the mid-1980s, the industry almost entirely comprises small and a few medium-sized firms. In many respects, the residential renovation industry is similar in nature to the single-family homebuilding industry immediately after the Second World War.

■ It is anticipated that the industry will continue to be characterized by a predominance of small firms over the 1986-2001 period. Growth is expected in larger firms specializing in certain types of work such as bathroom or kitchen renovations, possibly through franchising organizations. Significantly less opportunity for growth is expected for individual firms attempting to be "jacks of all trades."

■ Technological advances in the renovation production process have been few, and no major changes are expected over the 1986-2001 period. The highly qualified skilled labour required for renovation work is in short supply; there appears to be a need for a new trade, the master renovator. Master renovators would be specialists having knowledge of the technology, management and marketing of the renovation business.

The Housing Industry and Change

■ Single-family homebuilders on their own are unlikely to pursue or adopt positive technological change with any degree of vigour. The nature of the industry, which is a consequence of the nature of the housing product and its market environment, is the reason for this. This is not to imply the industry will not respond forcefully and positively to technological change, but that it generally requires outside encouragement and support.

■ The single-family homebuilding industry has shown a high capacity for quickly adjusting to changes in its marketplace through the expansion in the number and size of firms during times of increasing demand and the contraction in the number and size of firms during times of contracting demand.

■ The analysis suggests there is a role for government, particularly at the senior levels: to work with the single-family homebuilding industry, encouraging and supporting changes that are to the mutual advantage of both. The areas of joint interest include the following:

— Government financial and related support would stimulate the search for and adoption of new or improved ideas, processes and products in the construction and land development sectors. This could be justifiable on economic grounds if the social benefits generated by change are sizable compared to the costs.

— Government can moderate cyclical instability at the national level or within the various regions, causing positive repercussions on the single-family homebuilding industry.

— Another area for potential government initiative is construction labour mobility. Given the nature of the construction industry, workers should be highly mobile both geographically and between construction sectors; however, geographic labour mobility in the mid-1980s has been sluggish.

— A final government initiative would be to examine all aspects of the housing regulatory environment in its broadest sense. The goal of such an exercise would be to eliminate unnecessary negative regulations and restructure the regulatory environment to be more conducive to the introduction of new ideas, processes and products, while not neglecting broad public policy concerns.

The Housing Sector and the Economy

■ The importance of the housing sector in the overall economy in the 1980s is less than it has been during much of the postwar period, particularly during the decades of the 1950s and 1970s.

- Residential renovation undertaken by contractors has a much larger on-site labour component than new residential construction. However, this employment impact is offset in part by less spending on building materials, which generates fewer off-site jobs in manufacturing and other industries.

- Residential construction work in one province has positive economic repercussions in most other provinces to varying degrees.

- The housing sector has been characterized by cyclical instability over the entire postwar period, though the pattern has shifted within the past 15 years from generally being counter-cyclical to being pro-cyclical.

- Contrary to popular perception, new residential construction activity has not been characterized by reduced seasonal instability, at least not since the early 1960s.

- There are arguments both for and against using the housing sector to promote economic stabilization in the overall economy. Current public policy, which is supported by the private sector, is to avoid such use of the housing sector.

IMPLICATIONS FOR HOUSING FIRMS

The 1990s will be a decade of challenge for the housing industry. The expected overall decline in new housing demand virtually guarantees an increasingly competitive market environment.

However, a growing market opportunity is expected in the provision of lifestyle forms of new housing, particularly to purchasers from non-traditional buyer groups such as empty nesters and active seniors. Establishing a niche in the lifestyle market during the latter 1980s is expected to provide the perceptive builder with a competitive advantage in the early 1990s, when the continued aging of the baby boom generation causes a resumption in the long-term decline in demand for conventional single-detached homes.

Medium-sized and larger builders considering shifting production from conventional single-detached homes to lifestyle housing will need to do their homework. Risks will be involved, but these can be reduced by careful research into potential market opportunities.

Part of the challenge of successfully building lifestyle housing will be the marketing of the concept to potential buyers and to the municipalities in which such lifestyle communities will be located.

For small builders, the renovation market appears to offer expanding market opportunities, but again, firms will have to do their homework. The elements of the renovation business, such as marketing, costing, scheduling and customer relations, are in many ways different from the elements of the new single-family construction business. The builders who are successful in making the transition to renovation will be those who recognize these differences and turn them to their advantage.

The keys to success in the housing industry during the remainder of the century will be adaptability, flexibility, openness to innovation and the ability to recognize evolving market niches.

INTRODUCTION

The volume of new residential construction activity in Canada expanded rapidly during the three decades following the Second World War and peaked in 1976. The physical shortage of housing that existed immediately after the war was eliminated within a few years as the supply of new housing grew quickly in response to demographic pressures and rising affluence. Sharp shifts occurred in the mix of new housing built over this period — from predominantly single-family dwellings to apartments and back to single-family houses.

The aging of the postwar baby boom generation, the lower fertility rates of the past two decades and reduced real income growth mean that Canada no longer requires the production of an ever-increasing number of new housing units. The average annual demand for new housing is expected to decline during the 1980s as a whole from the average level of demand during the 1970s, and further declines are expected in the 1990s.

The focus is shifting to the maintenance and improvement of the existing housing stock. Since the early 1970s, residential renovation activity has experienced a rate of growth similar to the rapid growth characterizing new residential construction activity in the first three decades after the Second World War. In the 1990s, a further relative shift in spending is expected away from new construction and toward renovation.

How was the housing industry able to produce such an impressive number of new housing units over the past 40 years? What are the characteristics of the housing industry? How has it changed in response to changing demands? How is it likely to change in the future? How has the technology of building homes changed? What changes in building technologies are likely to occur in the future? What role has residential construction played as an agent of economic growth? What have we learned about the housing industry?

PURPOSE OF THE SUMMARY REPORT

CMHC has sponsored the major research initiative that resulted in this study to explore systematically the questions posed above and related questions. Over the years, numerous studies and analyses have provided considerable information on housing demand, housing needs, the quality of the housing stock and the role of government in the housing market. In addition, reasonably complete data are available on housing construction output, at least for new residential construction. However, information is significantly lacking on the producers of housing — single-family homebuilders, residential land developers, apartment developers and residential renovators. This applies not only to the structure of the industry in the mid-1980s, but for earlier periods as well. Projections for the industry in the future are also lacking.

The Housing Industry: Perspective and Prospective is intended to help fill this large gap in the housing information base. The results of this research, undertaken with the financial sponsorship of CMHC by Clayton Research Associates Limited and Scanada Consultants Limited, are contained in five working papers:

- Working Paper One, *The Evolution of the Housing Industry in Canada, 1946-1986*, examines the characteristics of the housing industry in the mid-1980s, how these differ from the industry immediately after the Second World War and the changes that occurred during the intervening period.

- Working Paper Two, *The Evolution of the Housing Production Process, 1946-1986*, undertakes a similar analysis of housing technology. It examines the technology of housing production in the mid-1980s, compares this to the technology of the immediate postwar period and analyzes the changes over the postwar period.

- Working Paper Three, *The Housing Industry and the Economy in Canada, 1946-1986*, explores the relationship between the output of the housing industry and the overall economy over the postwar period, including the use of the housing sector as a tool of federal monetary and fiscal policy.

- Working Paper Four, *The Housing Industry and Change*, explores the responsiveness of the housing industry to changes in its external environment and examines the widely held perception that the industry is unresponsive to change.

■ Working Paper Five, *The Housing Industry in the Future*, explores the major factors expected to shape the housing industry during the 1986-2001 period and the likely responses of the industry's technology and structure.

This summary report highlights the major findings of these five working papers. Readers interested in pursuing specific topics in more depth should consult the individual working papers. To obtain copies, call or write the Canadian Housing Information Centre, CMHC, 682 Montreal Road, Ottawa, Ontario K1A 0P7. Tel: (613) 748-2367

THE HOUSING INDUSTRY DEFINED

The housing industry, for the purposes of this study, encompasses firms responsible for new and renovation residential construction and the development of serviced land for residential use. These firms are predominantly privately owned. Housing firms are categorized into four groups.

■ Single-family homebuilders

For all intents and purposes, the single-family builder has been the backbone of the housing industry over the postwar period. Single-family homebuilders are typically firms that buy serviced lots and build single-family housing for occupancy, usually by a homeowner. These single-family builders generally put the entire housing package together, including land acquisition, design, construction, marketing and sales. Single-family builders can also be general contractors — building a custom home according to specifications on a lot provided by the homewner. Single-family houses include single-detached, semi-detached and row dwelling units.

■ Residential land developers

Residential land developers are firms that bring serviced land on stream in suburban locations or in zoned residential sites in built-up communities. They buy raw land and arrange for all necessary approvals and servicing for the development of the land as residential property.

■ Apartment developers

Mainstream apartment developers, like their single-family builder counterparts, are responsible for the entire development process from site acquisition to design, construction and disposition of the units, that is, selling condominiums, renting up and selling to investors or retaining for their own investment portfolio. Unlike single-family builders, who largely perform their own construction, apartment developers often hire a general contracting firm to undertake the actual construction.

■ Residential renovators

Renovators are firms engaged in residential additions, major improvements, rehabilitation, retrofitting, conversions and repairs involving more than one trade. The key here is the specification of more than one trade. Renovators for the most part are general contractors. They respond to a property owner's request for specific work to be done. Some renovators undertake a broader range of work and are more comparable to the single-family homebuilder. They buy an existing residential property, design the work to be done, oversee the construction and then sell the finished property to a homeowner or investor.

Although many housing firms are involved in only one housing-related activity, particularly single-family homebuilders or renovators, many are not. Many small homebuilders undertake renovations, other builders develop land or apartments, while still others are involved in non-residential construction. Similarly, an apartment developer may also develop land or vice versa.

APPROACH

This study by necessity describes the housing industry, its elements and its production processes. However, there is a deliberate attempt to explore causal factors — why the industry is the way it is, why it has changed and how it is likely to change by the end of the century. Other facets of the approach that should also be noted are described below.

Dealing with the Absence of a National Housing Industry

The housing industry consists of a diverse group of firms, most of which operate either in a single market area or in a limited number of market areas. Unlike the producers of automobiles and consumer durables, there is no national housing industry as such. The approach in this study has been to concentrate on key features that are common at the local market level.

Dealing with the Lack of a Comprehensive Information Base

No exhaustive literature base exists on the characteristics of the housing industry or its production processes over the entire postwar period. To compensate, an attempt has been made in this study to weave a story from available information, recognizing the numerous comparability problems and gaps. The story has been supplemented with information from interviews with persons knowledgeable about the housing industry and its structure and operations over the postwar period.

Focus on Single-family Homebuilders

Although information is provided on all four sectors of the housing industry, the primary focus of this study is on single-family homebuilders, for several reasons. Single-family homebuilders have constituted and will continue to constitute the single largest component of the housing industry. There is also considerably more information available for this sector of the industry. Finally, the benefits of providing an in-depth examination of one sector of the industry were considered to outweigh the benefits of providing generalized information on each of the four sectors.

CHAPTER ONE
THE HOUSING MARKET CONTEXT

HOUSING INDUSTRY OUTPUT IN 1986

Total housing output in Canada in 1986 was valued at an estimated $31.6 billion (table 1). This figure includes both the value of construction work put in place and the serviced land associated with the construction output. The estimated output of the housing industry was valued $10.5 billion lower, at $21.1 billion. This lower value reflects the fact that an estimated 10 percent of single-family house construction is done by owner-builders, and an estimated 70 percent of residential renovation work is done outside the confines of the renovation industry by do-it-yourselfers and special trade contractors.

Table 1. Estimated Housing Output. Canada, 1986

	Housing Output		Housing Industry Output[a]	
	$millions	%	$millions	%
New Construction[b]				
Single-family homes[c]	11,609	37	10,448	49
Apartments	2,871	9	2,871	14
Sub-total	14,480	46	13,319	63
Land				
Single-family homes	3,370	11	3,370	16
Apartments	448	1	448	2
Sub-total	3,818	12	3,818	18
Renovation[d]				
Sub-total	13,343	42	4,003	19
Total	**31,641**	**100**	**21,140**	**100**

Source: Working Paper One, p. 9.

[a] Excludes 10 percent of new single-family construction and 70 percent of renovation output, which are assumed to be undertaken outside the housing industry.
[b] Excludes supplementary costs.
[c] Includes cottages and mobile homes.
[d] Includes repairs.

Almost two-thirds of the housing industry output was related to new single-family houses (construction plus land). Apartments (construction plus land) and renovations accounted for an estimated 16 and 19 percent, respectively, of total output. Land development itself accounted for nearly one dollar in five of the housing industry's total output.

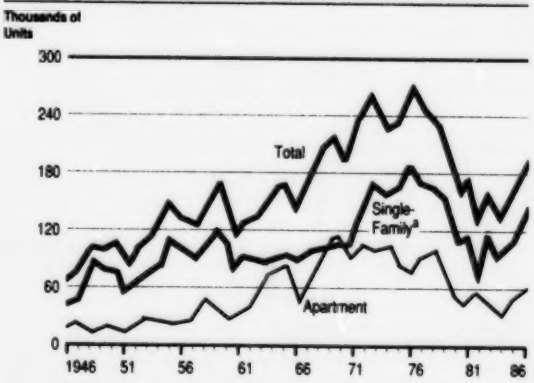
HOUSING OUTPUT TRENDS DURING THE POSTWAR PERIOD [1]

Trends in Housing Starts

Several trends in the level of new housing production, as exemplified by the number and composition of housing starts, are worthy of note.

There was generally a sustained upward trend in total new housing construction over the first 30 years of the postwar period, followed by a decline over the next decade. The volume of construction showed renewed vitality in the mid1980s. (See figure 1.)

Figure 1. Housing Starts by Type. Canada, 1946-1986



Source: Working Paper One, p.11

[a] Single-family includes single-detached, semi-detached and row housing units.

There was a sharp and sustained rise in apartment construction during the late 1950s, which generally continued through to the early 1970s. Apartment construction then declined over the subsequent decade.

The production of new single-family houses exhibited a more volatile pattern. Starts climbed rapidly from the late 1940s to the late 1950s, contracted and then remained stable through much of the 1960s, increased rapidly in the first half of the 1970s and then fell sharply during the early 1980s. The mid-1980s have seen a sizable recovery in single-family homebuilding activity.

1. Data availability necessitated that trends in total housing output be examined rather than housing industry output; however, the broad trends in the two series have likely been quite similar.

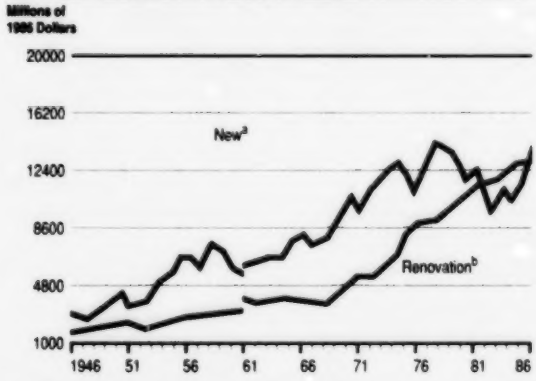
Another trend of note is the sharp year-to-year variation in total housing starts, which reflects their cyclical volatility.

The regional distribution of housing starts over the postwar period was remarkably constant, with the following exceptions: a sharp drop in Ontario's share of national starts occurred in the last half of the 1970s, with a comparable rise in the Prairies' share; a prolonged relative weakness in Quebec housing starts was experienced from the late 1960s through the 1970s; and an interruption and then reversal of the long-term rise in British Columbia's share of national starts occurred in the first half of the 1980s.

Trends in Renovation Activity

The volume of renovation spending has increased throughout the postwar period. For the first 25 years of this period, the increases were quite modest. Beginning in the early 1970s, the rate of increase accelerated (figure 2). In terms of constant 1986 dollars, total spending amounted to $13.3 billion in 1986, more than double the value of 1971 spending.

Figure 2. Real Residential Construction Expenditures by Component, Canada, 1946-1986



Source: Working Paper One, p.15.

Note: There is a break in the time-series data in 1961.

[a] Excludes supplementary and land costs.

[b] Includes repairs; repairs for the 1946-1952 period are estimates.

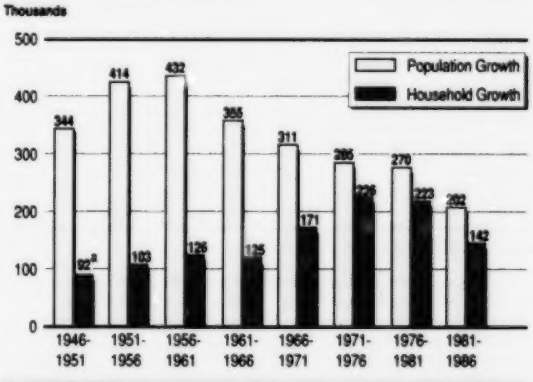
As a result of this growth in the real value of renovation spending, renovation has generally accounted for a growing share of total residential construction expenditures since the mid-1970s, accounting for more than 50 percent in the early 1980s. This share fell below 50 percent in 1986 owing to the surge in new construction.

Major Forces at Work

A number of forces contributed to the identified trends in housing output over the postwar period. For new housing, the combined effects of these trends are reflected in the underlying patterns in household growth, the prime determinant of the level of the demand for new housing.

The sustained rise in the level of new housing production in the first three decades of the postwar period reflected a number of forces. The huge demand backlog created by the Great Depression and then by the Second World War released a flood of demand during the early postwar period. To this was added the demand resulting from generally high levels of immigration through the 1950s. Through the 1960s and the first half of the 1970s, household growth was attributable to the aging and subsequent movement of the large number of babies born during the 1940s and 1950s, rising divorce rates, sustained real income growth and a generally ample supply of affordable rental housing. CMHC also played an active role in stimulating housing production during the first three decades of the postwar period. (See figure 3 for data on population and household growth.)

Figure 3. Average Annual Population and Household Growth, Canada, 1946-1986



Source: Working Paper One, p.18.

[a] Estimates by Clayton Research Associates as no census was conducted in 1946.

The decline in new housing production in the decade after the mid-1970s resulted from overbuilding in the mid-1970s, the volatile interest rates of the early 1980s, the 1981-1982 recession and the aging out of their twenties of most of the baby boom generation — the key age group for new household formation. The rise in new housing production in the mid-1980s reflected in part the backlog of demand from the early 1980s.

The aging of the baby boom generation was a primary cause of the shifts in the composition of new house construction between single-family homes and apartments over the postwar period. Similarly, regional shifts in housing starts over the postwar period corresponded closely with the economic performance of the various regions.

The rapid growth in real renovation spending since the early 1970s reflects to a significant degree the increasing obsolescence of the existing ownership housing stock relative to the demands of homeowners.

THE HOUSING MARKET ENVIRONMENT, 1986-2001

The external environment, which comprises economic, demographic and lifestyle trends, as well as the role of government and the growth of computer-based technology, has a number of potentially significant consequences for the housing market over the 1986-2001 period.

Demand for New Housing

The demand for new housing, its tenure mix and its characteristics will be influenced by the external environment in which the housing market operates.

■ The total demand for new housing will decline.

A range of demand scenarios are calculated, based on four alternative household growth projections (table 2). The four household projections are derived from high and low assumptions of future immigration and household headship rates (that is, the propensity of people to form households). The projections include the demand for mobile homes, which is assumed to increase slightly over the 1986-2001 period, rising from an average of 5,000 units per year during the 1986-1991 period to 8,000 units per year during the 1996- 2001 period.

Although there is considerable variation in the level of future demand inherent in the four projections, they do share two characteristics:

— The average annual total demand for new housing, including mobile homes, is higher during the 1986-1991 period than during the 1981-1986 period.

Table 2. Average Annual Demand for New Housing, Canada, 1981-2001, Dwelling Units (000s)

	Low Immigration Constant Headship Rates	High Immigration Constant Headship Rates	Low Immigration Rising Headship Rates	High Immigration Rising Headship Rates
Actual[a]				
1981-1986		156.5		
Projected				
1986-1991	170.5	182.5	194.5	205.5
1991-1996	146.0	179.0	162.0	195.0
1996-2001	127.5	180.5	144.5	198.5

Source: Working Paper Five, p. 30.

Note: Includes mobile homes.

[a] Approximated by housing completions and estimated mobile home shipments.

— The average annual total demand for new housing is expected to decline through the 1990s from the level of demand experienced during the 1986-1991 period, although there is some levelling off in the late 1990s under the two high immigration scenarios.

It appears the surge in new housing demand that characterized the postwar period up to the decade of the 1970s is over. Although a recovery in average annual demand is expected during the last half of the 1980s compared with the first half of the decade, largely because demand in the first half was dampened by high interest rates and the recession, the long-term slide in demand is expected to resume in the first half of the 1990s. However, demand through the 1990s will be sensitive to the level of immigration.

■ A preference for homeownership will continue, but demand from traditional buyer groups will lessen.

Canadians over the postwar period have exhibited a strong preference for homeownership. Approximately 62 percent of all households in mid-1986 were owner-occupants. With the baby boom generation centred in the age groups having the highest incidences of homeownership over the 1986-2001 period, it is likely the demand for new housing will continue to focus on ownership forms of housing.

Traditionally, most purchasers of new homes have come from a fairly narrow segment of the population. Through the 1990s, the baby boom generation will increasingly move away from the stages of households that have traditionally generated most of the demand for new housing: the newly-married-couple stage, then the married-with-young-children family and finally the move-up family. As a result, builders are likely to experience a shrinking market over time from these traditional buyer groups.

■ The focus on lifestyle housing will grow.

In a sense, builders have always produced lifestyle housing. Rental apartments conform with the lifestyles and financial resources of young adults and older singles. Inexpensive single-family homes target young families with children, while large, more expensive single-family homes targeted the move-up family.

The new housing industry is discovering, however, that many needs and desires can be satisfied through appropriately designed housing beyond the traditional housing forms of rental apartments, starter homes and move-up homes. These desires arise largely from changing ways of life (for example, more couples intent on remaining childless, more mothers working full-time and more people recognizing the value of physical fitness). Canadian builders have also noticed the positive response of non-traditional buyer groups, such as empty nesters and active seniors, to new forms of housing and living environments in the United States.

Baby boomers are also becoming interested in lifestyle housing. The United States experience illustrates that baby boomers increasingly want more than just an affordable home. They want a residential environment that adds to the enjoyment of life. This does not mean that most families with young children or most move-up buyers, even in the United States, will not continue to opt for a conventional single-detached home in a conventional subdivision; it does mean that an increasingly important new market segment is emerging — the lifestyle living environment.

The lifestyle housing revolution has begun in a small way in Canada; it will undoubtedly gain momentum in the coming years.

■ Growth is expected in congregate forms of new housing for the elderly.

Congregate forms of housing refer to accommodations for seniors that are not self-contained dwelling units. Congregate housing for seniors can consist of a bed in a total care environment (a nursing home or a geriatric hospital, for example) or hostel-type accommodation in a retirement home providing room, board and minimal care. Opportunities in congregate housing for seniors are emerging for the housing industry, either for builders/investors or for general contractors.

Another concept that has generated considerable interest but, as yet, little concrete action is the life-tenure lease, whereby asset-rich seniors with limited current income can pay a lump sum in return for a guaranteed life occupancy with care, meals and access to emergency services.

■ Greater emphasis on quality, distinctiveness and value will be reflected in the new homebuyer's decision to purchase.

The aging of the baby boom generation and the growth in the number of empty nester and senior buyers, in addition to changing lifestyle trends, suggest an increasingly discriminating purchaser in the coming years. The desire for personalization suggests a greater variety of designs and a demand for more customization by purchasers. Value and quality will increasingly come to the forefront as more buyers are drawn from the middle-aged and older household groups.

The New Housing Product

Two potential changes in the characteristics of new single-family houses are average size and the so-called "smart house."

■ A decline in the average size of new single-family homes is likely in the 1990s.

For many years, observers have been confronted with two apparently inconsistent trends — smaller average family sizes and an increase in the average size of single-family houses built. The trend toward lifestyle housing, however, will likely reduce the average size of single-family houses built during the 1990s.

■ The "intelligence" of new houses will increase.

There is little doubt the computer revolution is going to be increasingly felt in new housing, not only in the way housing is constructed, but also by enhancing the quality of life for its occupants. A major effort in this field is the "smart" house being developed by the National Association of Home Builders' (NAHB) Research Foundation in the United States.

The smart house focuses on unit wiring. The housing design contains a single cable that performs three functions: power distribution, control/data signal distribution and audio/video signal distribution. Essentially, a single outlet is used for lamps, hair dryers, security detectors and television and stereo speakers. An advantage of the system is the interaction possible among appliances, since everything is powered by central wiring.

Renovation Activity

Renovation activity will affect both ownership and rental housing, but likely not to the same degree.

■ The level of renovation activity on ownership housing will likely continue to increase.

Real renovation spending initiated by homeowners is expected to continue to increase rapidly through the 1990s for several reasons.

First, comparatively few homeowners in their late 40s and 50s have traditionally purchased a new home; they have continued to spend sizable amounts on renovation, and this trend will likely increase as their real incomes rise.

Second, the amount of spending is positively correlated to the age of the ownership housing stock. As the housing stock continues to age, real renovation spending per unit should increase.

Finally, the growth of lifestyle housing for empty nesters and active seniors will mean that relatively more move-up families and, to a lesser degree, families with young children will be moving into the existing housing stock. Many of these buyers are likely to undertake major renovations to upgrade the house shortly after they purchase.

Whether the volume of real renovation spending increases sufficiently to counter the decline in real spending on new construction is a matter of conjecture. Projections prepared by Clayton Research Associates Limited for the Province of Ontario suggest sufficient renovation spending increases for that province, but it may not be true for the country as a whole.

■ Increases in real renovation spending on rental housing may be inhibited by rent controls.

As the rental housing stock in Canada ages and becomes obsolete, a significant increase will be needed in real spending on maintenance and upgrading. However, the extent to which this increased spending arises will largely be determined by the presence of rent controls through the 1990s, the provisions of these rent controls for allowable rent increases in older buildings and the rate of return permitted on renovation investments.

Because rising real rents in existing buildings are a major determinant of the volume of renovation spending in the rental market, the prospect for significant private sector renovation is limited in the seven provinces with province-wide controls; rents in older buildings are not likely to rise at a significantly higher rate than the inflation rate (the rent control provisions virtually guarantee this). Without the prospect of increased profits, many landlords are likely to defer major renovation work. In addition, it is unlikely that government subsidies to encourage rental renovation work would be of a scale to cause substantial growth in this category of renovation spending.

Construction Technologies

Computer-based technologies have the potential to produce a revolution in construction production processes. Similarly, government initiatives to promote research and eliminate unnecessarily restrictive planning and building regulations could have major benefits.

■ No major technological shake-up is expected to result from computer-based technologies.

The innate characteristics of the single-family housing market, which have inhibited the widespread adoption of factory-based assembly techniques in Canada, are also likely to restrain the introduction of

computer-aided manufacturing (CAM) in the homebuilding process. These techniques, however, will increasingly be adopted by manufacturers of building products, since they are more suited to manufacturing. They offer manufacturers the opportunity to achieve economies of scale while providing flexibility in the output produced. CAM will be especially important for the manufacturers of products that have to be uniquely designed and sized for the renovation market.

Computer-aided design (CAD) has much greater potential for widespread adoption by the homebuilding industry, especially larger builders specializing in lifestyle housing. CAD will allow these builders to respond more effectively and quickly to changing buyer demand and will allow buyers a greater degree of flexibility when choosing what they want in a house and its external appearance. CAD also appears to have potential in the renovation sector.

With the growing use of personal computers for costing and scheduling work, computer-based technologies are likely to gain increasing acceptance in the housing industry. However, as with most technological advancements over the postwar period, the changes most likely will be evolutionary in nature rather than revolutionary during the 1986-2001 period. Their impact is more likely to be in the areas of higher quality and greater consumer choice than in reduced costs for builders or renovators.

- Government initiatives could enhance efficiency.

By funding and disseminating research results, government could accelerate somewhat the introduction of innovations in the new homebuilding and renovation sectors over the 1986-2001 period compared to the past decade or two. Actions taken to make regulations more positive in application and to reduce resulting unnecessary costs would also enhance efficiency.

CHAPTER SUMMARY

Highlights of the examination of past and expected future trends in the output of the housing industry include the following:

- The postwar demand for new housing peaked in the mid-1970s. Although the late 1980s represent a temporary reprieve from a long-term decline in demand, the decline is expected to resume in the 1990s.

- The future demand for new housing is closely related to future levels of immigration to Canada. On the whole, sharply higher immigration would increase the anticipated level of demand for new housing.

- Canadians have exhibited a strong preference for homeownership, a preference expected to continue through the 1990s.

- Increasingly, new home buyers in Canada will opt for lifestyle housing, as a growing proportion of new home buyers are drawn from non-traditional buyer groups, such as empty nesters and active seniors.

- The average size of new single-family homes is expected to decline in the 1990s, but the "intelligence" of new houses will likely increase.

- The level of renovation activity undertaken on the stock of existing ownership housing in the 1990s is expected to continue the rapid upward trend that began in the 1970s; however, a corresponding increase in the volume of renovation spending on the rental stock may be inhibited in those provinces that have rent controls.

- No major revolution in the housing production process is expected in the 1990s. However, computer-aided design is expected to increase in popularity, especially among larger builders specializing in lifestyle housing and among renovators.

CHAPTER TWO
THE SINGLE-FAMILY HOMEBUILDING INDUSTRY

THE STRUCTURE OF THE SINGLE-FAMILY HOMEBUILDING INDUSTRY IN THE MID-1980s

The National Profile

The typical homebuilding firm in Canada is small, building fewer than 10 houses per year. Even the largest firms, which may build up to 2,000 housing units per year, are small in scale compared to the average firm in other goods-producing industries, such as automobile or consumer appliance manufacturing. Few homebuilders operate in more than one market area, and those that do operate only in selected markets. No homebuilding firms are active in all major Canadian markets.

While most firms in the homebuilding industry are not comparable in size to large industrial firms, there are nonetheless significant size differences among homebuilders. The vast majority of the almost 9,000 firms building single-family houses in 1984 were small, having annual total revenues of less than $2 million; most homebuilding firms had revenues of less than $250,000. (See table 3.)

Most small homebuilding firms are one-person or two-person operations, constructing two or three houses at a time and fewer than 25 on an annual basis. In general, they build a fairly standard product, although many undertake custom building as required. They have low overhead, often operating from an office in the owner's home or with part-time staff. Some have a construction foreman or labourer on staff. While there are many of these small homebuilding firms, small builders account for fewer than 25 percent of the single-family houses constructed in Canada. There is a high rate of entry and exit among these firms owing to their relative lack of business experience, lack of management skills and weak pricing practices. Few small firms remain in the business for an extended period. Fewer yet grow into larger firms. Nonetheless, they provide their owners with considerable scope for their entrepreneurial energies and often serve market niches where larger firms choose not to operate.

Medium-sized firms produce between 25 and 99 homes per year and tend to run more businesslike operations (the more so the larger the firm). They also have larger staffs than small builders, typically hiring

Table 3. Homebuilding Firms Specializing in Single-Family Construction by Size of Firm, by Total Revenues and by Region. Canada, 1984

Region	Total Revenue				
	Less Than $ 250,000	$ 250,000 - $ 1.9 Million	$ 2 Million - $ 9.9 Million	10 Million and Over	Total
	Percent of Firms				
Atlantic	59	39	2		100
Quebec	41	50	8	1	100
Ontario	75	21	3	1	100
Manitoba	73	21	6		100
Saskatchewan	66	30	4		100
Alberta	63	32	4	1	100
British Columbia	74	25	1	0	100
Canada	68	28	3	1	100
	Percent of Total Revenues				
Atlantic	16	69	15		100
Quebec	6	50	35	9	100
Ontario	10	26	18	46	100
Manitoba	13	22	65		100
Saskatchewan	12	33	55		100
Alberta	10	34	29	27	100
British Columbia	26	57	17	0	100
Canada	12	37	24	27	100

Source: Working Paper One, p. 27.

Note: Data for firms specializing in single-detached construction are used as an approximation for builders of single-family units.

a construction supervisor, a salesperson and a bookkeeper. However, in many of these firms, the owner remains actively involved in all aspects of the operation.

Large homebuilding firms generally construct 100 or more homes per year. The average large builder constructs about 200 houses per year; only a handful of firms build as many as 1,000 units. There are relatively few large homebuilding firms across the country — fewer than 75 in total in 1984. Yet they account for nearly 30 percent of the new single-detached houses built by the homebuilding industry. These firms typically have a professional management, including a core staff having construction management, accounting, financial and marketing skills.

Regional Variations

The structure of the single-family homebuilding industry varies widely across the country. All major urban markets have a large number of small firms, reflecting the ease of entry into the industry that has been a characteristic over the entire postwar period. Less uniform is the role played by large builders in the major urban markets. Some major markets, such as Toronto, Ottawa, Winnipeg and, before the 1980s, Calgary, have a number of large builders, accounting for 50 percent or more of all single-family houses built by the housing industry; others, such as Montreal and Vancouver, are conspicuous for the absence of a contingent of large builders. Although a rough correspondence exists between market size and average builder size, there are numerous exceptions.

The structural differences among major urban markets reflect, among other things, differences in local market land ownership patterns and the regulation of the building and land development processes. It appears, however, that in none of these markets do a limited number of large firms have the power to control new house prices or market share.

Innate Characteristics of the Housing Industry

The absence of very large firms in the single-family homebuilding industry suggests an absence of substantial economies of scale, that is, a significant inverse relationship between the construction costs per unit and the number of houses built.

A number of characteristics of the marketplace for new homes combine to produce this lack of large firms:

- Geographically dispersed markets.

The Canadian population is spread over an immense continental land mass. While most of the population lives within a 200-kilometre (125-mile) band north of the United States border, this band stretches more than 6,400 kilometres (4,000 miles). The largest metropolitan market (Toronto) accounts for less than 15 percent of the country's population. Only three metropolitan areas have populations in excess of one million. The remaining 70 percent of the population is dispersed among several hundred cities, towns, villages, hamlets and rural areas.

- Heterogeneous consumer demand.

The single-family housing industry is faced with a multitude of demands for housing, ranging from small to luxury townhouses, from homes for first-time buyers to more elaborate homes for people purchasing for the second or third time, to expensive custom-built homes for the wealthy. Consumers exhibit considerable differences in the types of housing they want, the location, the amenities and the price or rent they are willing to pay. Moreover, community and neighbourhood features, such as the proximity of housing to schools, shopping and recreational facilities, enter into the housing decisions of many consumers.

- Site-specific products and high transportation costs.

Housing consists of both a structure and a site. Unlike the vast majority of manufactured consumer goods, both new and renovated housing are tied to specific sites. Although the structure can be entirely produced in a factory, similar to most consumer goods, the bulkiness of such a product and the costs of transporting it make such a process expensive as distances to sites increase.

Thus, to date, most residential construction has taken place on-site, because it has generally been more economical to bring the labour and materials to the site than to transport the factory-built structure. While considerable use is made on-site of prefabricated components, it is more efficient, even in a highly developed country like Canada, to make extensive use of on-site labour.

- Local regulations/knowledge.

During much of the postwar period, the regulation of building was a municipal responsibility. The result was a proliferation of dissimilar regulations, which served to discourage builders from operating simultaneously in a large number of municipalities. The promulgation of a National Building Code by the federal government assisted in providing some uniformity to building codes, but its adoption by municipalities was voluntary. Over the past decade or so, most provinces have adopted province-wide building codes modelled on the National Building Code that are applicable to all municipalities in their jurisdiction. However, the enforcement of the code generally remains at the municipal level, resulting in a variety of local interpretations. Nonetheless, province-wide codes have brought more uniformity to building regulations.

A large disparity still exists among municipalities on matters such as building permits, site planning and residential land development requirements. For the most part, these are totally under the control of individual municipalities. Builders and developers must become familiar with these local procedures and regulations to operate successfully in a given municipality.

The extensive involvement of such a large number of municipal authorities in the building and land development process has been one factor retarding the growth of large firms operating in numerous market areas.

- High degree of cyclicality.

Due to the lengthy production period for new single-family housing, which ranges from several weeks for single-detached houses up to several months for larger townhouse structures, there is often a lag in the housing industry's response to changes in underlying economic and market conditions. This lag results in periodic overbuilding with a consequential increase in risk to firms in the industry.

- Ease of entry.

Little capital is required to enter the single-family housing industry, since suppliers and special trade contractors, also called sub-trades, often provide materials and services on credit; land developers often provide credit terms as well. Moreover, the principals of very small firms do much of the construction work themselves. As a result, small firms are able to enter and leave the industry rapidly, depending on local economic and housing market conditions.

THE STRUCTURE OF THE SINGLE-FAMILY HOMEBUILDING INDUSTRY AT THE END OF THE SECOND WORLD WAR

Although no comprehensive statistics are available on the firms producing new single-family housing immediately after the Second World War, it is clear that most housing was constructed by very small firms. "House-building has not attracted large-scale construction firms and the field has been left almost entirely to the small home-builder."[2]

During the war, a government-owned super builder/developer did emerge — Wartime Housing Limited — and with it a number of large general contracting firms that undertook the construction work. The company was truly a large-scale national homebuilding entity with responsibility to secure land and build and manage housing. Between 1941 and 1945, Wartime Housing Limited constructed 16,849 rental single-detached houses.

The company had a number of inherent advantages not available to private-sector single-family builders in the postwar period, including a large guaranteed market for a standardized product, ready access to land (expropriated if necessary) and capital, and little need to pay attention to the bottom line of the income statement.

2. H. Carver, *Houses for Canadians* (Toronto: University of Toronto Press, 1948), p. 63.

THE GROWTH OF THE SINGLE-FAMILY HOMEBUILDING INDUSTRY IN THE FIRST POSTWAR DECADE

The 1945-1954 period witnessed not only a rapid increase in the number of single-family homebuilding firms, but also an expansion in the size of a number of existing firms and the entry of a few new firms that attempted to operate on a large-scale basis.

Data tabulated by CMHC on builders engaged mainly in speculative building under the National Housing Act (NHA) indicate that large builders had become an important part of the homebuilding industry by the mid1950s (table 4). The 85 firms that built 100 or more NHA-financed homes in 1955 accounted for 39 percent of the total production of the 1,699 builders tabulated.[3] The average large builder built 171 houses in 1955.

Table 4. Single-Family Homebuilders by Size of NHA Operations. Canada,1955

Number of Units Completed Under the NHA in 1955	Number of Builders	Number of Units Completed
	Percent	
1-6 units	42	6
7-24 units	36	22
25-99 units	17	33
100 or more units	5	39
Total	**100**	**100**

Source: Working Paper One, p. 36.
Note: Data for all homebuilders are used as an approximation for single-family builders.

THE ABORTED RISE OF SUPER BUILDERS

As noted above, a number of large single-family homebuilders emerged in the 1950s. Some, like Campeau, became very big and accounted for a large share of the output in their local market. They could not get any bigger without moving outside their own market area.

The late 1950s and early 1960s were expansionary times for many homebuilding firms. Not only did they diversify into land and apartment development and strive for an increased market share in their local market, a number of firms entered other market areas, often far from their home base of operations.

Successful expansion to other urban markets was not as easy as it appeared. For example, Campeau's houses in Montreal, which were based on successful models in Ottawa, did not appeal to the Montreal buyer. Quality Construction (now Qualico Developments) retreated from Regina because the market could not meet the volumes Quality wanted to obtain. Consolidated Building Corporation also ultimately retreated to its Toronto base from a multi-city operation.

Clearly, expansion to unfamiliar market areas was a risky proposition. Clifford Fowke, in a retrospective examination of the housing industry, summed it up:

> Some firms tried running simultaneous operations in various city areas across Canada, and were known as multi-city builders. Almost every one of them failed because of lack of "on-the-spot" knowledge and tastes, things which companies now take in their stride.[4]

Other builders, particularly the Nu-West Group, became super builders in the 1970s and early 1980s only to see their operations collapse under the pressure of high interest rates and the 1981-1982 recession.

ROLE OF LARGE BUILDERS LESSENS IN THE 1960S BUT RISES AGAIN IN THE EARLY 1970S

The decline in the volume of new single-family construction in the early 1960s and the several years of stable output that followed had repercussions on the structure of the single-family homebuilding industry. Comparison of 1955 CMHC data on the structure of NHA homebuilders with the annual data that became available beginning in 1960 suggests that large builders bore much of the brunt of the less favourable market conditions.

Despite the reduced role of the large builder, the average production per large builder did not decline in the 1960s from the levels of the mid-1950s. The average large NHA builder built between 170 and

3. A large builder is defined as one that constructs 100 or more houses per year. It is interesting to note there were more large builders in existence in the mid-1950s building under the NHA than there were in total 30 years later. Based on building permit data, Statistics Canada estimates there were 70 large single-family building firms in 1985 in the census metropolitan areas, where virtually all large builders would be active, compared to the 85 large firms active under the NHA in 1955.
4. C. Fowke, "When HUDAC was the NHBA — Toronto Convention Revives Old Memories," *Canadian Building*, March 1979: 48.

225 homes per year during the decade of the 1960s — the average in 1955 was 171 homes. Large builders in the early 1960s were concentrated in Ontario, Manitoba and Alberta.

Just as the large builder segment of the single-family homebuilding industry was affected disproportionately by the housing downturn in the early 1960s, so too did it benefit most from the resurgence in single-family starts that began in the latter part of the decade. Through the first four years of the 1970s the market share of large NHA builders exceeded 40 percent, which was slightly higher than the 1955 figure.

THE TROUBLED EARLY 1980s TAKES ITS TOLL BUT THE SINGLE-FAMILY HOMEBUILDING INDUSTRY RECOVERS

Historically high interest rates and the most severe economic recession since the 1930s had profound negative repercussions on the single-family homebuilding industry in the early 1980s:

- The number of single-family homebuilders declined.

The 1981-1982 recession resulted in a reduction in the number of single-family homebuilding firms, but the magnitude of the reduction is imprecise. (See table 5.) Data from Statistics Canada's annual census of general residential contractors suggest the decline was quite modest — from 8,965 firms across Canada in 1981 to 8,678 in 1983, a decline of only 3 percent.

Table 5. Number of Single-Family Homebuilding Firms. Canada and Ontario, 1980-1986.

	Census of Residential General Contractors		Ontario New Home Warranty Program[a]
	Canada	Ontario	Ontario
1980	n.a.	n.a.	2,020
1981	8,965	2,733	1,894
1982	8,870	3,113	1,434
1983	8,678	2,894	2,060
1984	8,994	3,679	2,268
1985	n.a.	n.a.	2,705
1986	n.a.	n.a.	3,419

Source: Working Paper One, p. 48.

[a] Number of registered builders enrolling at least one home during the year.

However, data from the Ontario New Home Warranty Program (a compulsory program for all builders of ownership housing in the province) show a quite different picture. The number of active builders in Ontario declined from 2,020 in 1980 to 1,434 in 1982, a decline of nearly 30 percent. While the time period and coverage of the data series from Statistics Canada and the Ontario New Home Warranty Program differ, it appears that the decline in the number of builders resulting from the 1981-1982 recession was significantly larger than the Statistics Canada data indicate.

It appears there was a significant decline in the number of single-family homebuilders resulting from the 1981-1982 downturn in demand.

- Many builders cut back their operations.

A reduction in the size of existing firms is reflected in the decline in average revenues per single-family homebuilding firm reported by Statistics Canada. In current dollar terms, the average revenue per builder declined by 22 percent between 1981 and 1982. Although average revenues increased in 1983 and 1984, they did not recover to the level reported in 1981.

- Even in bad times, new firms entered the industry.

Examining annual changes in the total number of single-family builders masks the vivacity in the structure of the industry. While a large number of firms left the industry in 1981-1982, a considerable number entered the industry during these years as well. The Ontario New Home Warranty Program data show that over 1,000 new firms entered the industry in Ontario in 1981 and 1982 — 487 of these in 1982, the year the recession was at its worst. Data from Quebec also indicate a number of new builders entered the single-family homebuilding industry in that province during the 1981-1982 period — a total of 728 firms.

Many of these new firms were probably established by tradespeople responding to a lack of work from the builder community by building one or two houses on their own. However, a number were established by entrepreneurs who sensed there would be opportunities once the recession ended. Stolp Homes, now one of Toronto's large builders, was established in late 1982, as was Park Lane Homes, a large Vancouver-based homebuilder.

■ Sales and marketing approaches adapt to market circumstances.

The nature and intensity of the difficulties faced by builders as the economy moved deeper into recession were not uniform. Hence, the impact of the recession on operations differed for different firms.

It appears the recession resulted in pre-selling being adopted almost universally by the single-family homebuilding industry across the country. Another marketing approach used in the early 1980s was "creative financing" provided by the builder. Buy-downs, in which the builder offered a certain percentage reduction in interest rates, was one example. The recession also appears to have resulted in many builders becoming more cognizant of the preferences of prospective buyers.

The onslaught of the recession dried up the demand from move-up buyers. Many builders responded by redirecting the appeal of their product to first-time buyers, by reducing lot sizes, house sizes and house specifications. Other builders moved into the much smaller, expensive custom house market, while others moved into the renovation arena.

The single-family homebuilding industry expanded once again with the recovery of demand for new houses in the mid-1980s. Data on the number of active builders registered with the Ontario New Home Warranty Program show a sharp rise — from 2,060 firms at the end of 1983 to 3,419 at the end of 1986, a 66 percent increase. Data from Statistics Canada for all census metropolitan areas show a rise from 4,635 builders in 1983 to 5,874 in 1986.

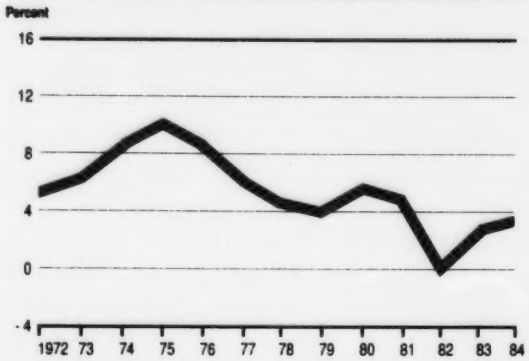
FINANCIAL ASPECTS OF THE SINGLE-FAMILY HOMEBUILDING INDUSTRY

Profitability

Profits of homebuilders are an elusive item to specify accurately. A commonly referenced rule of thumb is that builders try to earn a 10 percent profit margin. But it is not clear if the 10 percent refers to overhead as well as before-tax profit and, if so, the specific items of overhead to be included.[5]

Annual financial information beginning in1972 is available from Statistics Canada's census of residential general contractors. With the exception of the mid-1970s, homebuilders have, on average, fallen considerably short of the 10 percent rule of thumb for profits after overhead. (See figure 4.) Profit margins, before tax but after overhead, climbed progressively in the 1970s from 4.8 percent in 1972 to 9.5 percent in 1975, but then declined over the remainder of the decade to 3.7 percent in 1979. This pattern more or less coincided with underlying market conditions.

Figure 4. Before Tax Profit Margins for Firms Specializing in Single-Family Construction. Canada, 1972-1984



Source: Working Paper One. p.69.

Note: Data for all housebuilding firms are used as an approximation for firms specializing in single-family construction

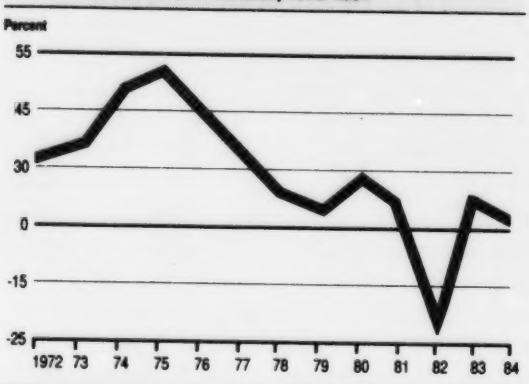
Before-tax profit margins in the 1982-1984 period, the latest years for which data are available, have on average been significantly below the profit margins achieved in the 1970s. The average builder experienced a slight loss in 1982, a recession year. While profit margins climbed in 1983 and 1984, the average profit margin in 1984 was only 3.6 percent.

Although profit margins are an important aspect of a builder's financial performance, the before-tax rate of return on equity is probably as critical, if not more critical, an indicator of performance, particularly for medium-sized and large firms. (See figure 5.)

5. One study concluded that in 1943 homebuilders' profits and overhead together accounted for 10 percent of total construction costs excluding land. See O.J. Firestone, *Residential Real Estate in Canada* (Toronto: University of Toronto Press, 1951), p. 403.

The data suggest that the homebuilding industry as a whole during the 1970s was a lucrative business. The before-tax rate of return on equity reached a high of 52 percent in 1975. At the low point of the decade, 1979, the rate of return amounted to 16 percent.

Figure 5. Average Net Profit Before Tax as a Proportion of Equity for Firms Specializing in Single-Family Construction. Canada, 1972-1984



Source: Working Paper One. p.70.

Note: Data for all housebuilding firms are used as an approximation for firms specializing in single-family construction. Data pertain to a sample of builders excluding small builders.

The average rate of return moved higher during the 1980-1982 period, but turned negative at the depth of the 1981-1982 recession; the rate improved in 1983 but remained comparatively low.

Operating and Overhead Costs

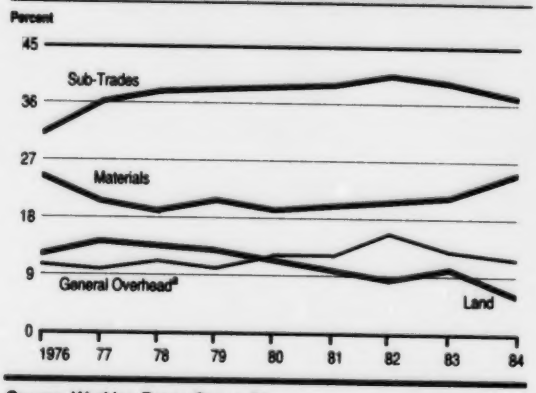
The four major costs incurred by homebuilders are payments to subtrades, building materials, land and general overhead (office staff, financing, depreciation, and so on). (See figure 6.)

Payments to sub-trades is the single largest cost for builders. The relative importance of payments to sub-trades increased during the late 1970s to early 1980s — from less than 35 percent of total revenues to 40 percent in 1982. These costs, relative to total revenues, then declined slightly in 1983 and 1984.

The purchase of materials is the next largest cost component — about 20 percent of the total. These costs remained fairly stable in the late 1970s, but experienced a slight rise in the early 1980s.

In the late 1970s, land was the third largest cost component for builders, accounting for 13 to 15 percent of total revenues. This proportion is low compared to the proportion of new house costs usually attributed to land in the 1970s (typically 25 to 30 percent). In the 1980s, land costs have declined to an even smaller share of total revenues, amounting to less than 10 percent during the 1982-1984 period.[6]

Figure 6. Major Costs as a Proportion of Total Revenues for Single-Family Homebuilders. Canada, 1976-1984



Source: Working Paper One. p.71.

Note: Data for all housebuilding firms are used as an approximation for single-family housebuilders.

[a] Includes items such as office salaries and financing.

In the late 1970s, general overhead typically equalled 11 to 12 percent of total revenues. Overhead costs increased sharply in 1982 in response to higher financing costs, but experienced a relative decline in 1983 and 1984.

THE SINGLE-FAMILY HOMEBUILDING INDUSTRY IN THE FUTURE

The changing external and technological environments suggest a number of potential changes in the structure of the single-family homebuilding industry by the end of the 1990s.

Maintenance of a Large Cadre of Small Builders

The number of small builders (those constructing fewer than 25 houses per year) is expected to decline considerably over the 1986-2001 period. However, a large number of small builders will exist at the turn of the century, as there will always be opportunities for the small builder in small centres and rural areas and, especially, in building custom homes.

6. It is not immediately obvious why land costs represent such a small proportion of total revenues in these data.

Increasing Market Share for Large Builders

Large builders (those constructing 100 or more houses per year) are expected to capture a gradually increasing share of the single-family housing market during the last 15 years of the century. The introduction of computer-based technology will likely stimulate the market penetration of larger firms.

Since the potential profits from the production of lifestyle housing will likely be greater from developing the land than from the construction of the housing, larger builders increasingly will enter the land development business. Only large firms are likely to have the financial resources to purchase, plan and service the land and construct the community amenities required for the creation of lifestyle environments.

Many Medium-sized Builders Will Become More Like General Contractors

Typical medium-sized builders (those constructing 25 to 99 houses per year) will likely be quite different in the future from the typical firm in the mid-1980s. A recent long-range planning report released by NAHB in the United States concluded that medium-sized builders in that country face an uncertain future.[7]

With the growing popularity of lifestyle housing, the land developer who is not a builder/developer will take on ever-increasing responsibilities for the planning and development of the community as a whole, including internal and external design, project pricing, marketing and, often, sale of the housing units. These firms will permit a limited number of builders to build in their community under specific guidelines. The relationship will not strictly be of general contractor and client, but will become increasingly close to it.

Other Medium-sized Builders Will Specialize in Particular Market Niches

Since the housing market is becoming increasingly fragmented and is geographically dispersed, opportunities will exist for medium-sized builders to specialize in a particular segment of the market in a single medium-sized or larger urban market area. This speciality could be in single-family housing (for example, the low-density retirement village) or in other housing forms, such as apartment projects or congregate housing (for example, retirement homes).

Specialized medium-sized builders with detailed knowledge of narrowly focused market niches will tend to have an advantage over larger builders. They will generally be receptive to new ideas, including computer-based technologies.

CHAPTER SUMMARY

Highlights of the examination of past and expected future trends in the single-family homebuilding industry include the following:

- The single-family homebuilding industry has shown a high capability for adjusting to its changing marketplace.

- The single-family homebuilding industry continues to be characterized by a large number of small firms building fewer than 25 houses a year, a much smaller number of medium-sized firms building 25 to 99 homes a year and only a handful of large firms building 100 or more houses a year. Large builders play a more prominent role in selected large urban markets, including Toronto, Ottawa and Winnipeg.

- The existence of a large number of small builders suggests an absence of substantial economies of scale. The structural differences between market areas reflect, in part, local differences in land ownership patterns and the regulation of the building and land development processes.

- The financial returns from homebuilding are closely related to market conditions and the competitive environment. Generally, homebuilding was financially attractive in the mid-1970s, but has been much less attractive during the first half of the 1980s.

- It is expected that a substantial number of builders will leave the single-family homebuilding industry over the 1986-2001 period. It is also expected that large firms will gradually increase their share of the market and that medium-sized builders will increasingly become specialists in particular market niches or become more like general contractors, working for developers of planned lifestyle developments.

7. National Association of Home Builders, *Housing America-The Challenges Ahead* (Washington: NAHB, 1985), pp. 110-12.

CHAPTER THREE
PRODUCTION PROCESS OF THE SINGLE-FAMILY HOMEBUILDING INDUSTRY

BACKGROUND

The production process of the single-family homebuilding industry has changed considerably over the postwar period, particularly during the first two decades. The overall change reflects the cumulative effect of many evolutionary changes. The housing form has also changed over the period, though to a much lesser extent.

The roots of these changes date back to the years leading up to the Second World War and grew during the war years. Tracing two of these changes provides useful background for appreciating the advances incorporated into single-family houses of the mid-1940s, the starting point of this chapter.

The introduction of modern stud framing in the mid- to late 1800s was brought about by the mass production of inexpensive nails, which replaced hand-wrought nails, and power-sawn lumber. Beginning in the Chicago area, the "balloon" stud-framing approach, which derived its name from its lightness and efficient use of sawn lumber, superseded the heavy timber "eastern braced frame." This latter hand-crafted construction method used hewn timbers in a post-and-beam configuration, with a mortised-and-tenoned main frame, heavy knees or cross bracing, heavy infill frames and few nails.

The prewar and wartime periods also witnessed changes in the form of houses. Builders and designers began to focus on simplifying the form to favour cost-efficient production. The early Cape Cod and salt box styles were reintroduced in some urban markets in the 1930s and further simplified for the defence housing production programs of the war years. Features such as dormers, valleys, verandahs, internal jogs and corners were eliminated; the federal government promoted cost-efficient and livable small house designs during these years.

THE SINGLE-FAMILY HOUSE OF THE MID-1940s TO THE MID-1980s PERIOD

The following descriptions are intended to be representative of typical single-family houses constructed by the homebuilding industry during three time periods: the mid-1940s; the mid-1960s; and the mid-1980s.

The House of the Mid-1940s

FORM AND SIZE The small bungalow was the most popular single-family housing form of the mid-1940s, reflecting the trends of the depression years and wartime housing production. The one-and-a-half-storey house gained considerable popularity, and two-storey houses also began to be constructed. CMHC's Integrated Housing Program, while accounting for a tiny fraction of total new housing production, was extremely influential in promoting the popularity of small, basic houses; the Corporation's small-house design books and plan services were also effective.

Designer ingenuity was fully challenged to maximize the living space in a 7.3 by 9.8 m (24 by 32 foot) bungalow, which was designed to match lumber and sheet material sizes, and its one-and-a-half-storey counterpart, which made better use of the attic. Livable floor space was typically 71 to 93 m^2 (770 to 1,000 square feet) for bungalows and one-and-a-half-storey houses, and 111 m^2 (1,200 square feet) for two-storey houses.

BASEMENT The dirt-floor cellar, with its dampness and low clearances, had given way almost entirely to the concrete-floored full basement by the mid-1940s. The widespread use of crawl spaces under the "temporary" rental houses of Wartime Housing Limited was a short-lived practice.

FRAMING By the mid-1940s, the typical single-family house was being efficiently erected. Platform frame construction replaced the balloon frame approach, which used full-height wall studs even for two-storey houses.

Floor construction used wood joists, typically on 400 mm (16 inch) centres, with the first floor centrally supported on a nailed-together wood main beam and the upper floor and ceiling joists on load-bearing stud partitions. The subfloor was usually formed of 25 mm (1 inch) boards laid diagonally across the joists.

The typical pitched roof was framed with rafters notched and toe-nailed into the top plate of the exterior walls, butted against a ridge board at the peak and connected with collar tie board. It was rather weak in resisting downward snow loads and wind uplift, but had generally performed well for many decades.

Sheathing and cladding The exterior wall and roof framing was generally closed in with 25 mm (1 inch) board sheathing, but fibreboard sheet was not uncommon where brick or stucco was used. The wall was then wind-proofed with asphalted sheathing paper designed to retard wind penetration and shed incidental water that penetrated the cladding and trim details. Sheathings and papers had already been used in this manner for several decades.

Roofing was generally of mineral-surfaced asphalt shingles. Wood wall cladding, which required on-site painting, was clapboard or shiplap sidings and was typical in smaller eastern centres. Brick veneer was dominant in much of urban Ontario and Quebec, and the use of stucco was widespread in many parts of the western provinces.

Windows and doors Most windows were vertically sliding with wood sashes and frames and contained separate storm windows. Window glass areas generally equalled 10 percent of the livable floor area. Doors were panelled with solid wood, and the entry door often featured a window.

Insulation Insulation had not yet been fully adopted, but it was a feature in NHA houses; a minimum R value of 6.67 (Imperial) was required in the walls and ceilings of these homes. The attic commonly had 50 or 75 mm (2 or 3 inches) of vermiculite, wood shavings treated with lime, or loose mineral wool or 50 mm (2 inches) of mineral wool batts. The latter were also used to insulate exterior walls. A kraft-asphalt vapour-barrier paper with overlapped edges formed the inner face of the wall and ceiling batts.

Interior finishes Walls and ceilings were finished with plaster on gypsum lath or fibreboard "insulating" lath; the latter two materials were rapidly replacing wood lathing. Flooring was usually hardwood strips, with linoleum or asphalt tile in the kitchen and bathroom. Interior trim and millwork were painted or varnished wood.

Amenities The kitchen was small, often less than 5 m^2 (55 square feet). Cabinetry was typically solid pine or Douglas fir. Countertops were commonly surfaced with linoleum, but in some cases were painted wood or tempered hardboard. The kitchen contained perhaps 2.4 m (8 feet) of counter, including a single sink, with cabinets below and above. There was typically just one three-piece bathroom, usually with a small medicine cabinet but rarely a sink cabinet.

Services The electrical supply was 30 or 50 A, sufficient for lighting, a refrigerator, a stove, a clothes washer, a small water heater, and small tools and appliances. Water lines were typically copper, having replaced galvanized steel over the previous several years. Waste and vent pipes were of cast iron, while galvanized steel remained in use for smaller diameter pipes

Heating Houses were commonly heated with forced warm air, which had largely replaced gravity furnaces and space heaters. Hydronic heating remained fairly popular in some parts of the Atlantic provinces. Oil furnaces had replaced coal- or wood-fired furnaces in much of central Canada and the Atlantic provinces, and natural gas had been introduced through many parts of the western provinces. In the forced warm air configuration, the supply registers were placed in the central partitions and blew outward toward the exterior walls; return air registers were placed at or near the exterior walls, usually in the floor under windows.

Although the house tended to be too dry in winter due to its air-leakiness and the practice of bathing rather than showering, the adaptability of warm air heating to the use of humidifiers was not widely exploited.

Form and size While the 1950s bungalow, a larger version of the 1940s bungalow, was the dominant form of new house construction in the mid-1960s, complicated split-level forms were being constructed in considerable numbers. Purchasers wanted more elaborate style and more space, and the industry responded; somewhat less attention was paid to efficiency and spartan design than two decades earlier. Bungalows began to feature L-shaped floorplans, and two-storey houses vied with split-levels, particularly in western and central Canada. Most styles of houses incorporated "open planning," with living, dining and kitchen areas opening into one another. All houses were more generously endowed with light and toil-saving finishes and amenities than the houses of the mid-1940s. Living space was typically 100 to 120 m^2 (1,100 to 1,300 square feet).

Basement Basements changed little from those built in the mid-1940s, with the exception of the combination of crawl spaces and full basements underlying the split-level houses.

Framing Studs were smaller in cross section than those in use during the mid-1940s, and a steel main beam replaced the wood beam under the first floor in most cases. Diagonal bracing of walls had largely disappeared in recognition of the diaphragm (that is, rack-resisting) value of sheet sheathings. Roof trusses were supplanting traditional joists and rafters through much of the industry.

Sheathing and cladding There were substantial changes from the sheathing and cladding used in the typical house of the mid-1940s. Board sheathing and subfloor had been replaced almost entirely, except in some parts of the Atlantic provinces, by sheet materials: plywood or fibreboard wall sheathing and plywood subfloor and roof sheathing. Asphalt shingles remained the predominant roofing material. The change to prefinished, low-maintenance materials in wall claddings was well under way. Prefinished aluminum and hardboard sidings had supplanted much of the market for site-painted wood sidings and supplanted brick in some Ontario markets as well, while stucco remained popular in western markets.

Windows and doors Separate storm windows had yielded to integrated double-glazed arrangements, including hermetically sealed double-glazed and horizontally sliding sashless windows. The horizontal sliders, and to some extent the casement and awning forms of operable windows, had generally taken the place of vertically sliding windows. Aluminum made substantial inroads into the various forms of windows, competing with wood. Weatherstripping was being used in much of the new housing. The amount of glass used increased considerably in many cases; picture windows had gained widespread use in the previous decade.

Insulation Insulation practices began to change appreciably for many single-family houses, if not in the typical house. Recognizing the higher cost of heating with electricity, the electric utilities were recommending a 2-4-6 approach: 2 inches of insulation for basement walls, 4 inches for the frame walls and 6 inches for the roof (50, 100 and 150 mm, respectively). A few builders of gas- or oil-heated homes — both of which were considerably less costly than electric energy — also began to use higher insulation levels as selling features for their houses.

Fibreglass mineral wool had largely supplanted the rock wool type of insulation, mainly due to its ease of handling, and batts were used in most new attics and in all walls. In western Canada, however, many builders adopted blown-in cellulose fibre for attic insulation and found that large-roll polyethylene film lent itself to the vapour-barrier job in such a practice. Polyethylene film was being installed in ceilings and sometimes in walls in many electrically heated houses as well. This film was intended to offer more moisture protection to these houses, which were characterized by reduced air change and commensurately higher humidity. In the typical house, however, the batt paper face continued to serve as the vapour barrier.

Interior finishes Lath and plaster increasingly but slowly yielded to single-layer gypsum drywall. Finish flooring still featured hardwood strips in some cases, but builders and buyers tended increasingly to cover it with broadloom; by the mid-1960s, builders were beginning to place the broadloom directly on the plywood subfloor. The plywood subfloors and underlays also encouraged the broad acceptance of plastics: vinyl asbestos floor tile, roll vinyl and cushion

floor vinyl. Linoleum and asphalt materials, along with traditional hardwoods, were phased out of new housing. Plastics were used in many other ways: oil paints were replaced by oil-alkyds, and latex paints made substantial inroads. Wood trim, however, was still used extensively.

Amenities The kitchen had increased in size somewhat, typically offering about 9 m^2 (100 square feet) and often including an eating area. Cabinetry was essentially all plywood or veneered particleboard, generally appearing much like the solid wood cabinets of the mid-1940s. Countertops were bright, cleanable, durable high-pressure paper-plastic laminates. Kitchen counter space had grown to 4.6 m (15 feet) or more, including the sink and range, with full cabinetry. Typical new houses offered the convenience of one-and-a-half or more bathrooms, and sinks were set into convenient vanity cabinets.

Services Electrical service had grown to 50, 60 and 100 A. Water lines were still copper, as were the above-ground waste and vent pipes in the typical house. ABS (acrylonitrile-butadiene-styrene) and PVC (polyvinyl chloride) plastics began to be used for waste and vent plumbing, offering faster assembly and visual acceptability both above and below ground.

Heating Heating continued to be provided by forced warm air. The 1940s configuration had been reversed to counter convection in the early 1950s: the warm air register positions were located at the house perimeter under the windows, and the return air registers were in the central halls. Electric baseboard heating, with its lower initial costs, also began to gain acceptance, particularly in Ontario, Quebec and Manitoba. The typical house was considerably more airtight than its mid-1940s forerunner, due to improved windows, sheet sheathings and plywood subfloors; the latter allow tighter floor-to-wall junctions than do board subfloors. Further, the typical house was equipped with showers, in addition to a bath. With less air-changing and more moisture sources, the house of the mid-1960s tended to operate at a higher humidity than its predecessors. Nevertheless, the forced warm air system allowed easy installation of humidifiers; the houses often came equipped with a drum-type humidifier.

The House of the Mid-1980s

Form and size The typical house of the mid-1980s is about twice the size and equipped with a greater number of bathrooms and amenities than the typical house of the mid-1960s. A typical mid-1980s house has two storeys, four bedrooms, two-and-a-half bathrooms and over 186 m^2 (2,000 square feet) of living space.

In many areas, however, more modest houses are constructed in addition to larger and more luxurious houses. These more modest houses are generally the same form as the L-shaped bungalows and split-level houses of the mid-1960s. One housing form that has remained from the 1970s is the raised basement house, also referred to as the raised ranch, split-entry or bi-level house. This house has the lower costs of the bungalow, while using a raised basement as a finished living area to provide a generous overall living space.

Basement The single notable change in the basement concerns insulation. Basement walls are now commonly insulated to R 12, from the first floor level down to at least 0.6 m (2 feet) below grade. Preserved wood foundations are still far from being a part of typical houses, but their use is apparently increasing. Preserved wood foundations were first used experimentally in the Mark III and Mark IV research houses of 1961 and 1963, respectively. These research houses had been suggested by the National Research Council (NRC) and built under the aegis of the National House Builders' Association (now the Canadian Home Builders' Association). The use of pressure-treated preserved wood to produce full basements was adopted with increasing zeal in the United States through the late 1960s. Since its acceptance by CMHC in the early 1970s, its use has been adopted to some extent in parts of western Canada and in some rural areas elsewhere.

Framing One notable change since the mid-1960s has been the remarkably swift replacement of the traditional 50 by 100 mm (2 by 4 foot) stud frame with 50 by 150 mm (2 by 6 foot) framing. This has occurred in response to the desire to add a greater thickness of insulation to the walls.

Sheathing and cladding Perhaps one of the greatest Canadian successes in building materials has been the full development of the waferboard type of structural particleboards. Using resources that were primarily production waste, the waferboards have largely replaced plywoods in sheathing walls, roofs and subfloors.

Insulating sheathings have also been remarkably swift and effective in development and application. Expanded cellular polystyrene boards now compete with semi-rigid mineral wool in this usage.

Vinyl sidings have made a strong market impact, after some initial setbacks, and now compete with the prefinished aluminum and hardboard sidings that supplanted painted wood two decades earlier. Brick veneer and stucco still remain popular cladding materials in Ontario and much of western Canada, respectively.

Windows and doors The windows and doors of the typical house of the mid-1980s differ little from those of its mid-1960s counterpart, although the overall glass area has increased somewhat (countering the energy-conserving intent expressed, at considerable cost, in the remainder of the house). Wood, aluminum, vinyl-clad wood and rigid vinyl extrusions are all competing in window markets, but wood and aluminium windows remain dominant. Airtightness has increased to a consistently high level with the industry development of performance standards for windows. Insulated steel doors, equipped with durable weatherstripping, have become common.

Insulation and airtightening The typical house of the mid-1980s incorporates two substantial responses to the oil price increases of the 1970s — increased thermal insulation and airtightness. The typical house now features wall and ceiling insulation levels of R 20 and R 30, respectively, varying somewhat with the range of winter climates across the country. Glass fibre batts predominate in walls and compete with blown-in cellulose fibre or mineral wool in attic usage. Wall insulation is often augmented with insulating sheathings to attain or exceed the typical thermal values.

The overall airtightness of the mid-1980s house is perhaps 25 to 35 percent higher than its mid-1960s counterpart. The use of polyethylene film air/vapour barriers, tighter windows and doors, and packed or gasketed sill details has become widespread.

Interior finishes Interior finishes have changed little from the materials and practices of two decades earlier. Trims have now become plastic-clad or rigid plastics in many cases, but site-painted wood is still common. Wood panelled and mirror panelled walls are often featured in one or two areas of the house.

Amenities The kitchen has continued to evolve in size, planning detail and factory-finished cabinetry. The number of bathrooms in the house of the mid-1980s is typically two-and-a-half. Plastic integral bath-shower units are more in evidence, but ceramic tile remains extremely popular. Flush-mounted recirculating fireplaces, built-in vacuum systems, walk-in closets, dishwashers, microwave alcoves, window seats, sun spaces and open entranceways are common in many of the large new houses built in the mid-1980s.

Services Electrical service is typically 150 A. Water lines are usually copper, but plastic is now accepted and widely used in some regions. Drain, waste and vent piping is almost universally plastic.

Heating Heating has been relatively unchanged from the mid-1960s, in the use of forced warm air distribution and the predominant use of atmospheric (that is, no induced aspiration) natural gas furnaces. However, some medium-high and high efficiency gas furnaces are now being installed, offering significant savings in fuel consumption and the assurance of proper exhausting in the more airtight houses, for a considerably higher initial cost. More efficient oil furnaces are being introduced, particularly in the Atlantic provinces and other areas where natural gas is not available. Electric heating remains common in Quebec, Manitoba, Newfoundland and some parts of Ontario; the once dominant baseboard installations, which still have the lowest purchase price of any heating system, have been supplanted to some degree by electric furnaces to provide the air-handling advantages of forced warm air systems. Heat pumps and air-conditioning units are now installed in significant numbers.

THE HOMEBUILDING PRODUCTION PROCESS DURING THE POSTWAR PERIOD

The technology used in house construction has changed substantially over the postwar period. While these changes have been evolutionary in nature, cumulatively they have resulted in considerable change. Significant technological changes have occurred in what is referred to as the mainstream homebuilding process and in factory-based manufactured housing.

The Mainstream Homebuilding Process

Over the first two decades of the postwar period, the focus of improving construction technologies was on cost rationalization and reduction, overall productivity, on-site speed and the reduction of person-hours, particularly skilled person-hours. In the past two decades, and especially after the mid-1970s, there has been less emphasis on cost reduction and productivity improvement. This may have been the result of the shift in production to more luxurious houses on higher-priced land.

The production processes of the single-family homebuilding industry evolved little after the first two decades of the postwar period (as illustrated in table 6.) Plywood sheathings and subfloors have given way to waferboard wood composites; pneumatic hammers/staplers have become common; vinyl sidings now compete with other low-maintenance materials; plumbing has moved toward all-plastic piping (even for hot and cold water supply lines); chimneys are now mostly prefabricated metal assemblies; pre-hung doors and prefabricated stairs have become common; plastic bath-shower units have become more common; and many medium-sized and large builders commonly use computer-based costing and job control.

In contrast, the end result of the first two decades of change was remarkable. If a 110 m^2 (1,200 square foot) house of the mid-1940s were slightly modified by adding a second bathroom and landscaping to compare with a typical house of that size built in the mid-1960s, it would have required approximately 2,400 on-site person-hours and seven months to construct in the mid-1940s. By the mid-1960s, the same house required around 950 on-site person-hours and two months to construct. No single change accounted for a large proportion of this improvement; it was due to numerous small changes in the production process.

In the mid-1980s, essentially the same house still requires about 950 on-site person-hours and two months for completion. The mid-1980s home, however, offers lower heating costs and perhaps more comfort than its predecessors.

Table 6. Changes in the Mainstream Homebuilding Production Process, Canada, Mid-1940s to Mid-1980s

Process	Mid-1940s	Mid-1960s	Mid-1980s
		Practice	
Excavation	Bulldozer	Backhoe	No change
Basement	Concrete block and site-mixed concrete used with site-built board formwork. Boards then re-used as wall and roof sheathing	Transit-mixed concrete used with prefabricated formwork	Little change but some use of preserved wood foundations
Wall framing	Platform frame. Some stationary assembly line processes. Little use of power equipment or piece-work sub-trades	Precut studs, tilt up, stationary assembly line with sequencing of piece-work produced by sub-trades	Little change
Roof	Laid out and erected by skilled tradesmen	Engineered, prefabricated roof trusses in general use	Little change
Wall and roof sheathing	Boards	Plywood sheets	Waferboard sheets
Siding	Wood clapboard, brick and stucco	Precoated aluminum and hardboard introduced	Introduction of vinyl siding
Plumbing and heating	Site-fitted and intalled	Prefabricated chimneys. Some ductwork sub-assemblies	All-plastic plumbing. Chimneys and flues prefabricated
Interiors	Wet-finished with plaster, cured and brush-painted	Dry-finished with drywall and roller-painted	Little change
Windows/ cabinetry/ doors	Fabricated on site	Prefabricated windows, cabinetry and countertops	Introduction of prehung doors and prefabricated stair units

Source: Working Paper Two, pp. 14-15.

Factory-based Manufactured Housing

There has been an increasing role for factory manufacture in the mainstream single-family housing production process. Housing materials and components now feature more factory content, on-site labour has decreased commensurately, and quality has risen in the factory-produced portions of the house because the factory affords controlled working conditions, machine-based production and standard inspections and testing. However, the dream of the 1930s and following decades, the "house-in-a-day" manufactured wholly in a factory, has failed to become commonplace. Even as homebuilders use more components with higher factory content, the mainstream industry remains site-based and appears little interested in the more complete factory-based houses, which have long been technically possible.

There have been two paths of development for factory-based manufactured housing: thrusts into bold innovation; and an uneven progress with, or fallback into, simple off-site fabrication of wood frame housing under cover.

Thrusts into bold innovation During the period of productive change for mainstream site-based housing, the mid-1940s to mid-1960s, the bolder proponents of factory-based manufactured housing were innovative. Their quest for optimal factory manufacture of housing included the development of stressed-skin and sandwich systems, unit bathrooms, kitchen-bathroom-utility "core" units and closed-panel-and-core systems. The stressed-skin and sandwich systems in particular, in which the "skins" of plywood wall, floor and roof panels are waterproof-glued to light webs to achieve rigidity and strength with minimal materials, were being developed in both western and Atlantic Canada. The combining of this approach with advanced box-module systems was achieved in western Canada, as well as in Quebec, in the 1950s. During that decade, the core units and closed-panel-and-core systems, in which closed panels are completed in the factory with exterior and interior claddings, insulation and wiring installed, were also eliciting considerable interest and some sales.

By the mid- and late 1960s, and indeed into the 1970s and 1980s, innovators were pioneering other capital-intensive advances, such as the use of computer-controlled (punch card or tape, at first), semi-automated assembly jigs for closed panel systems and a greater level of sophistication in the production of modular housing. Modular housing refers to houses manufactured in two or more complete box sections, as large as road haulage will allow, joined on-site to form the finished house on a prepared foundation.

These various ventures into factory-based housing failed to be accepted by the mainstream homebuilding industry or to compete with it. Experience over the period suggests two broad reasons for this failure. The bolder pioneers during the period of the 1940s through the 1960s complained that municipal regulations, such as building codes, inspections and local trade jurisdictions, severely constrained the achievement of sufficient production volumes to operate factories profitably. These proponents were also unable to muster the financial or political strength to gain wider acceptance by municipalities, which may have been due, in part, to the realization that potential savings over on-site construction would not be substantial even if high production volumes were attained. The potential savings would not be substantial because site builders were busily adopting factory-manufactured components and reducing site person-hours during the same period. Further, the bolder factory-based systems continued to encounter technical difficulties.

Simple off-site fabrication of wood frame housing under cover The concept of producing wood frame houses under cover made advances during the 1940s and was accepted into the homebuilding mainstream in the late 1950s and through the 1960s and 1970s. Several large builders set up factories to supply house "packages" for their own developments, for other builders and for individual buyers with their own lots. The packages included at least rough wall and partition panels, roof trusses and precut joists and beams. The larger factory operators, such as Engineered Homes in Calgary and Campeau in Ottawa, also produced cabinetry, stairs, windows, door assemblies, millwork and other higher-value items.

Whether panel or modular in form, these off-site factory systems achieve some advantages in the volume production of wood frame housing: precision, squareness and general quality; full year production and fast close-in to expedite winter work; the use of relatively unskilled labour with steadier employment and improved comfort and safety; and speed of

delivery to the buyer. However, the end product is still a wood frame house similar in materials, components and even some basic production-construction tools and methods as its site-built counterpart. Also, cost savings are slight, and there may be less flexibility to meet widely varying or complex designs and varying market demands than there is with site-based operations.

When costs, quality, production speed, volume and the productive use of unskilled labour were important in meeting an intense demand for standardized affordable houses, off-site fabrication was used in mainstream housing production. However, when these factors were of lesser concern — when large and luxurious houses on higher-priced land were in demand — reliance on factory-based fabrication declined. Generally, these latter conditions have prevailed from the mid-1970s through the mid-1980s.

THE SINGLE-FAMILY HOMEBUILDING PRODUCTION PROCESS IN THE FUTURE

Several potential technological changes are expected to occur in the single-family homebuilding production process before the end of the century.

Housing Production Process Likely to Become More of a Factory or Factory-based Process

It is expected that market penetration of factory-built components will continue to increase up to the end of the century. As well, market penetration of factory-built housing could also gradually increase. More specific details are provided in the points that follow.

Use of Wood-composite Products for Wall and Roof Claddings Likely Will Increase

Stamped metals and thermoplastics will likely begin to compete strongly. Light, insulating, precast concretes will become the "prestige" cladding. Regardless of the material, manufacturers will attempt, as always, to make these products look like shakes, tiles, clapboard or random stonework.

Market Penetration of Wood Basements Expected to Increase

Basements constructed of treated wood-composite panels will increasingly compete with those of lightweight precast concrete systems, offering a dry, mould-free living space.

Framing Expected to be Increasingly Produced in Wood-composite Sections

"Reconstituted wood" in efficient I-shapes and other webbed geometries is expected to compete with and supplant studs, joists and even floor and roof trusses. Using much less wood and smaller "weed trees," wood-composites offer generous depth to accommodate insulation and services. The market area for Canadian producers of wood-composite products will include much of North America.

House Systems Will Allow the Inclusion of "Smart House" Circuitry

In a "smart house," one wiring circuit recognizes and serves all AC and DC electrical appliances and devices, television and telephone signals, alarm systems and intercom systems through microchip switches on each device. The circuitry is completely fire- and child-safe. Central computer control of heating, air conditioning and phone-in signalling of appliances is readily accepted.

Changes in the Production Process Expected to Vary According to House Price

Upper-priced houses are expected to be based increasingly on wood-composites in competing systems, such as completely precut systems, pre-engineered shell framing package systems, large panel packages or room-size box modules akin to those currently being produced in Japan.

In the upper end of the market, precast ultralight concretes will likely compete with wood-composites in a range of system forms. At the least, ultralight concretes can provide an overall decorative insulating veneer, which may supplant brick veneer (the precursor of which may be the PALC material currently in use in Japan).

Kitchens will continue to be assembled much the same as now, but are more likely to include a computer-based control centre and "smart" appliances in the package. In all price ranges, bathrooms will increasingly feature plastic bath-shower-vanity units or sub-units, designed for flexibility in placement and appearance. Plastic piping will dominate all markets.

In the low- to moderate-priced markets, the wood-composite superstructure will evolve in much the same manner as in the upper end of the market. The more factory-built housing will be primarily comprised of large box module forms.

Housing Systems Expected to Use Heat Pump Heat Recovery Technology

Heating, ventilating and cooling systems are expected to increasingly use heat-pump heat-recovery technology, which recovers heat from exhaust air.

Depending on ongoing energy economics, including existing investment in distribution infrastructure, such technology may evolve to the advanced heat pump form using natural gas combustion.

No Change Expected in Interior Claddings

Interior claddings are likely to remain dominated by inexpensive, fire-safe gypsum drywall, but with one-pass resilient jointing/finishing.

Exports of Wood-based Housing Components Expected to Increase

Materials and components are expected to be increasingly shipped across Canada, and wood-composite products and components will increasingly be shipped to the United States. These latter products have significant potential to expand Canadian exports of building products to the United States before the end of the 1990s.

CHAPTER SUMMARY

Highlights of the examination of past and expected future trends in the single-family housing production process include the following:

- Although changes in the form of new single-family houses have been moderate over the postwar period, with the possible exception of the average size of the house, there have been significant changes in the production process of these houses: basements are now insulated and preserved wood foundations have gained some popularity; roof trusses have supplanted traditional joists and rafters; the traditional 50 by 100 mm (2 by 4) stud frame is being replaced with 50 by 150 mm (2 by 6) framing; in many areas waferboards have largely replaced plywood in sheathing walls, roofs and subfloors; prefinished, low-maintenance wall cladding materials, initially aluminium and hardboard but, increasingly, vinyl sidings, have gained greater market share; the overall window glass area has grown somewhat; new standards for windows have improved airtightness; insulation standards have improved significantly; trims have become plastic-clad or rigid plastic in many cases; and electric service is now typically 150 A.

  Moreover, synthetic high polymer (plastic) materials have made considerable inroads in all aspects of housing construction, from the glues used in the manufacture of waferboard and plywood to paints, countertops, floorings, insulation material, vapour barriers, carpeting, coatings, prefinished trim and piping for drains, waste and vents.

- Changes in the homebuilding process over the postwar period were largely evolutionary, but cumulatively these changes have had considerable impact. The increased use of factory-built materials and components resulted in significant productivity improvements in on-site labour, especially in the first two decades of the postwar period.

■ Entirely factory-based housing has never been accepted in the mainstream single-family homebuilding process. One reason for the lack of acceptance was that municipal regulations constrainted sufficient production volumes in the first two postwar decades, when interest in factory-based housing was most intense. A second factor was that potential savings over on-site construction were not substantial.

■ Several changes anticipated in the single-family homebuilding production process by the end of the century: The process will continue to become more factory-based; the types of products used for wall and roof claddings will expand to include wood-fibre materials, metal, vinyl and lightweight concrete; the use of preserved wood foundations will increase; framing and stressed-skin panel assemblies will increasingly be produced in wood-composite sections; house systems will allow for the inclusion of smart house circuitry; heating, ventilating and cooling systems will more often use heat-pump heat-recovery technology; the use of molded plastic bathrooms will increase greatly; extruded plastic piping will supplant metal even for supply piping; exports of wood-composite housing products and components to the United States will increase.

CHAPTER FOUR
INDUSTRY CHARACTERISTICS AND PRODUCTION PROCESSES IN THE REMAINING SECTORS OF THE HOUSING INDUSTRY

CHARACTERISTICS OF THE RESIDENTIAL LAND DEVELOPMENT INDUSTRY

Land markets are more complex than the markets for new housing construction. Local factors such as topography, land ownership, the municipal planning process, servicing standards, taxation and financial requirements and attitudes toward residential growth all shape the residential land market and, thus, the land development industry. These elements are in addition to market condition factors and the availability of entrepreneurial talents.

The land development industry also differs from the single-family homebuilding industry because governments in particular market areas have been actively involved in the land development function. Many municipalities across the country contain large subdivisions developed by provincial or municipal governments, usually with federal financial support. However, with a few notable exceptions, such as the City of Saskatoon, most serviced residential land during the postwar period has been brought on stream by the private sector.

An Overview of the Land Development Industry over the Postwar Period

The residential land development industry, in contrast to the single-family homebuilding industry, has gone through a major transformation in many market areas over the postwar period. It is now essentially a private-sector industry; immediately after the war, much of the development land was provided by municipalities, which had acquired the land through tax defaults in the 1930s and, in the Prairies, in the 1920s.

The structure of the industry has tended to concentrate over the postwar period, though this is not an attribute of every major market area. Factors leading to this concentration include the shifting of servicing costs to the land developer, a longer and more complex subdivision process and municipal constraints on the amount of developable residential land. Evidence exists of some economies of scale in the land development industry. Over the postwar period as a whole, much of the province of Quebec has been an exception to the concentration trend, as has Vancouver.

Lot prices appear to have been closely related to market conditions during the postwar period. Collusive pricing practices by large land developers do not appear to have been a prevalent characteristic of the industry, even though this was a frequent claim during the early 1970s.

The residential land development business has at times been extremely profitable, but it is also risky. Land developers face risks because they often gamble on whether or when a municipality will allow land to be developed. Due to the leveraged nature of the land development business and, often, the long lead times required to develop the land, land developers are susceptible to shifts in the demand for housing and fluctuations in interest rates.

The Land Market at the End of the War

There was no overall shortage of building lots in the immediate postwar period, though there was a fear that the private land development industry, to the extent it existed, was not capable of producing the large number of serviced lots required for returning war veterans.

Lot prices were comparatively low in the mid-1940s. Even by 1948, land costs accounted for just 8 percent of the combined land and construction costs of NHA-financed new houses. The average cost of a lot was $566. Servicing costs were generally not included in the lot price at that time, and the level of services provided was typically rudimentary.

Changes in the Early Postwar Period

Two major developments of the early postwar years had significant repercussions on the shape of the residential land development industry in this country. First, the supply of prewar housing lots soon disappeared due to the strong demand for new housing. Second, municipalities outside Quebec responded by shifting the financing burden of land development to the private land development industry.

There was generally not a shortage of serviced land at the end of the war. Many municipalities also had extra capacity in their services, including their educational facilities. However, this situation soon changed:

> The continued growth of residential construction at record levels ate up this surplus, and it was not long before virtually every new house in the average municipality meant new roads, new sewer, new water, new school buildings, and generally an extension of the municipality. At the same time, costs were rising, the expense of administration was increasing with resultant effect upon taxes, and in recent years the money markets have not been to the liking of the municipalities.[8]

Municipalities responded to the intensifying pressures for more serviced residential land in a number of ways: by requiring developers to install services in subdivisions at their own expense; by discouraging small houses; by discouraging residential development in general; and in some municipalities, by requiring a cash contribution to be made to the local school board.

The shift to prepaid servicing (the land developer pays the cost of installing roads, sewers, and so on, instead of the homeowner paying over a number of years through local improvement charges) was largely a product of the 1950s. By 1960, two-thirds of the lots for NHA-financed houses had prepaid services. The main exceptions were in Quebec and, to a lesser extent, British Columbia.

Many municipalities also responded to the financial pressures of growth by requiring developers to front-end the cost of extending trunk services to their lands. Increasingly, municipalities imposed lump sum charges per lot developed (often referred to as lot levies or imposts). With the shift in the burden of financing from the municipality to the developer, many municipalities began to require higher levels of services from the developer.

The result of this fundamental shift in the method of funding the provision of municipal services to new subdivisions was a substantial increase in the upfront capital funds required by land developers.

The Evolution of the Land Development Industry in Ottawa, Early 1950s to Mid-1970s

An excellent master's thesis studied the evolution of the residential land development industry in the Ottawa area, excluding municipalities in Quebec but including the Townships of Nepean and Gloucester, over the 1950-1975 period.[9]

Since the Ottawa experience over this period appears broadly typical of many other urban areas, it provides informative insights into the pressures on the land development industry and the resultant changes. (See table 7.)

■ Ottawa had a sizable number of land developers in the early 1950s.

The Ottawa area had a total of 98 residential land developers active during the first half of the 1950s. Although two firms developed more than 300 lots each during this period, the four largest firms accounted for only 30 percent of the lots developed.

Two important events in the early 1950s were to have significant implications on the longer-term evolution of the residential land development industry in Ottawa. Before 1952, the City was responsible for virtually all aspects of subdivision construction, from design through sewer construction. However, this began to change in 1952. Second, the Ottawa area was subjected to containment pressures both from the Ottawa Planning Board and the federal government to discourage development in the greenbelt, a wide band encircling the urban area.

8. Hon. R. H. Winters, "Our Housing Problem," speech at the Annual Dinner of the Canadian Institute of Plumbing and Heating, October 22, 1952, p. 4.

9. H. J. Watson, The Residential Land Development Industry: Selected Case Studies of Concentration in Local Markets, 1950-1975 (London, University of Western Ontario, 1979).

■ Concentration increased in Ottawa through to the early 1970s.

The residential land development industry in the Ottawa area became increasingly concentrated over the 1955-1975 period (table 7). The share of total lots developed by largest firms tripled from 30 percent in the first half of the 1950s to 89 percent in the first half of the 1970s. The number of developers declined sharply from a total of 98 in the early 1950s to eight in the early 1970s.[10]

Table 7. Structure of the Residential Land Development Industry. Ottawa, 1950-1975

	1950-1954	1955-1959	1960-1964	1965-1969	1970-1975
Number of subdivisions	122	118	61	29	17
Number of developers	98	90	37	16	8
Market share of four largest developers (%)	30	45	53	63	89
Developers by size (lots):[a]					
2-10	16	13	3	3	1
11-25	33	28	9	3	1
26-50	27	12	7	1	0
51-100	9	21	6	2	1
101-300	11	14	8	4	2
301-1,000	2	2	4	3	3
Total	**98**	**90**	**37**	**16**	**8**

Source: Working Paper One, p. 82.

[a] Total lots developed during the five-year period.

■ A large number of small firms left the Ottawa market from the mid-1950s to the mid-1970s.

The thesis provides unique data for the Ottawa market on the number of land development firms entering and exiting the industry by size and time period. During the late 1950s, a significant number of new firms entered the land development industry, and a significant number left. In contrast, during a downturn in demand in the early 1960s, few firms entered the industry, and a sizable number left. This was particularly true for the smallest firms, that is, firms that developed fewer than 26 lots in total over a five-year period. The number of these smaller developers dropped from 49 in the early 1950s to only six in the late 1960s.

The thesis concluded, "It would therefore appear that there has been some significant barrier to entry operating on a long term, preventing smaller producers from entering the Ottawa market."[11]

■ Several reasons exist for increased concentration in the Ottawa land development industry.

Actions and policies of municipalities and the federal government in the Ottawa area, and to a much lesser degree market conditions, appear to be the factors behind the significant reduction in the number of land developers in the area during the 1955-1969 period. The actions and policies include the prohibition of new housing in the greenbelt, the shifting of servicing costs to land developers and longer subdivision processing times. A weak demand for ownership housing in the early 1960s appears to have accelerated the outflow of firms from the industry as well.

Experience in Other Market Areas

The City of Winnipeg's land market also became dominated by large development firms in the early 1970s. A commission of inquiry suggested that some of the same factors evident in Ottawa were also present in the Winnipeg market, including planning regulations restricting the supply of subdivision land, a lengthy approval process and delays in installing necessary public works.[12] A study of the Edmonton land market concluded that the shift to developer financing of services, which occurred in the last half of the 1960s, was a critical factor limiting the number of residential land development firms in Edmonton.[13] Similar factors appear to have been present in the Toronto market.

The experiences in Quebec and British Columbia were different from most other areas. A study in British Columbia in the mid-1970s showed that the structure of the land development industry in British Columbia was characterized by many smaller firms.[14]

10. However, in the late 1970s, in response to the buoyant market conditions of the mid-1970s, subdivision activity increased in terms of the number of applications submitted and the number of firms involved. Larger developer firms not previously involved in the Ottawa market, such as Cadillac Fairview and Headway, entered the market during this period.
11. Watson, p. 152.
12. The Winnipeg Land Prices Inquiry Commission, *Report and Recommendations* (Winnipeg: Queen's Printer, 1977).
13. R. Cook, *Lot Prices and the Land Development Industry in Edmonton, Canada, 1971-1976* (Berkeley: University of California, 1977).
14. M. A. Goldberg and D. D. Ulinder, "Residential Developer Behaviour: 1975," *Housing: It's Your Move* Volume II, (Vancouver: University of British Columbia, 1976).

One possible explanation for the lack of large land developers in the Vancouver area is that the average farm size in the area was much smaller than in most other large metropolitan markets, making it much more difficult and expensive to assemble large land tracts.[15]

Growth of Builder-owned Co-operative Land Development Companies

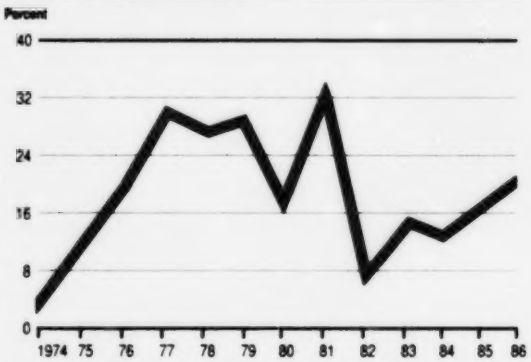
The late 1950s witnessed the establishment of several builder-owned co-operative residential land development companies in which a number of builders in a given market area banded together to assure themselves of an adequate land supply. These companies included Ladco in Winnipeg, Carma in Calgary and Buildevco in Kitchener.

For the most part, these builder-owned land development companies did not have long-term survival as co-operative land ventures. The short-term time horizons of the members appeared to be a major factor contributing to their lack of success.

The Profitability of Residential Land Development

While industry-wide financial data are not available for residential land developers, the record of one public company, Coscan (formerly Costain), provides some insight into the profitability of the land development business. (See figure 7.)

Figure 7. Gross Profit Margin on Land Sales. Coscan, 1974-1986



Source: Working Paper One. p.98.

Note: Land profits and general overhead as a proportion of land revenues. Coscan was formerly Costain.

15. E.V. Price, The Housebuilding Industry in Metropolitan Vancouver (Vancouver: University of British Columbia, 1970).

Coscan is primarily a residential building and land development firm. Operations are based in Ontario, although it has operations in Alberta and the United States as well. Its land development operations were extremely profitable in the late 1970s, though the magnitude of profits given given in figure 7 is overstated because general overhead is not included as an expense. In the 1977-1979 period, land profits (including general overhead) as a proportion of land revenues were in the vicinity of 30 percent.

Gross land profits (including overhead) as a proportion of land revenues plummeted with the 1981-1982 recession to just 7 percent. While profit margins have risen in concert with the improved post-recession housing market, Coscan's 1986 profit margin on land sales, 21 percent, was still well below the levels achieved in the second half of the 1970s.

The experience of many residential land development firms in the early 1980s shows that leverage is a dual-edged sword. When times are good, with serviced land prices rising and interest rates low, borrowing most of the front-end capital required to purchase, carry and service raw land can result in extremely high profit margins. The reverse, of course, holds true in times of weak demand and high interest rates.

Future Trends

The role of larger land development firms is expected to increase over the 1986-2001 period. The expected shift to lifestyle housing implies not only more larger-scale projects, but also increased front-end and ongoing capital requirements to develop these planned lifestyle projects.

Land developers are expected to take on ever-increasing responsibilities for the planning and developing of lifestyle housing as a whole, including the design, pricing and marketing of the new homes.

RESIDENTIAL LAND PRODUCTION PROCESS

The ultimate product of the land development process is the residential building lot, which is a piece of land of some size and configuration provided with services for water, sewage and storm drainage. This land almost exclusively fronts onto a paved roadway with street lighting, concrete curbs and sidewalks and, usually, underground wiring for power, telephone and cable television service.

Changes in the Residential Lot

Changes in lot sizes and subdivision configuration have occurred over the postwar period. In the 1940s and early 1950s, the typical lot and subdivision layout had a rectilinear configuration—rectangular shaped lots laid out in a rectangular, or square, grid pattern. Almost all single-family housing was of the single-detached form, on individual lots. To add variety and aesthetic appeal, and to achieve greater densities, various other subdivision layouts were introduced by planners in the late 1950s and early 1960s. These included cul-de-sacs, interior block systems, curved street patterns, loops and crescents. The new community of Don Mills in Toronto in the mid-1950s was probably the first to incorporate many of these innovative approaches to planning. Other subdivisions followed somewhat similar patterns in the late 1950s and early 1960s, including Whitmore Park in Regina, Silver Heights in Winnipeg and Glendale in Calgary.

During the mid- to late 1960s, there was a noticeable trend to large lots with larger houses. However, with increasing servicing costs, and with energy and transportation costs rapidly rising during the early 1970s, housing construction shifted to more higher-density forms of single-family housing, such as semi-detached and row housing.

To accommodate this shift to higher densities, and still maintain reasonable levels of aesthetic and social compatibility, new planning guidelines were adopted. In the 1970s, the zero lot line concept was introduced and eventually accepted by a number of municipalities. This approach, in which the single-detached house can be built adjacent to one property side line, offered single-detached housing at higher densities — by using narrower lots — and provided greater compatibility with semi-detached and row housing units within subdivisions. Other variations of the zero lot line concept soon followed, including linked housing.

These concepts were designed to reduce the costs of new single-family housing, primarily through more efficient use of land.

The Approval Process

One of the most significant changes in the land development process over the past 40 years has been the growth in the bureaucracy of the planning and approval process, though wide differences still exist between municipalities.

A report prepared in 1975 provides insight into the range of complexities of the subdivision approval process.[16] The study examined ten major cities across Canada and indicated the number of agencies involved in the approval process and the minimum time required to gain approval on a routine subdivision application. The study found that, depending on the city in which the application was made, any number from five to 50 departments or agencies might be involved in the approval process. The minimum time required for routine applications ranged from two moths to 18 months; applications in Montreal, Hull and Saskatoon each took two months, while applications in Ottawa and Toronto took 18 months.

The number and complexity of land use regulations have grown substantially over the postwar period, and costs and delays have increased as a result. These regulations protect various interests and may be desirable to varying degrees. However, the challenge appears to be to instil a degree of rationalization into the regulatory process and to make the process of applying regulations more efficient.

The Provision of Services

In the late 1940s, the main services provided with new housing subdivisions consisted of water distribution, gravelled roads, swales and ditches for storm water runoff and septic tanks and beds for waste disposal. The water distribution, gravelled roads and ditches were installed by the municipalities and financed with local improvement charges.

Other services were gradually included in the development program and were installed at the time the subdivision was being built. These included underground storm sewers, sanitary sewers (replacing septic tanks), paved roadways, curbs, gutters and sidewalks. Generally, these services began to be provided in the 1950s.

The number, type and quality of services installed in a new community are largely a matter of local concern. No national standard exists for community servicing, which has led to significant differences in servicing standards between provinces, and even between municipalities within a given province.

16. A. Derkowski, Costs in the Land Development Process, prepared for the Housing and Urban Development Association of Canada, December,1975.

Commencing in the early 1950s, many municipalities required land developers to install and pay for services within new subdivisions. The only region that remained an exception to this requirement up to the mid-1970s was the province of Quebec. For most of the postwar period, most Quebec municipalities retained responsibility for and control of land development; services were installed by the municipality and the majority of costs recovered through local improvement taxation. However, due to pressures on municipal finances, Quebec municipalities began to shift more of the servicing costs to land developers in the mid-1970s. Services are installed and paid for by developers in all other provinces, with the exception of isolated cases such as the City of Saskatoon, where land is developed and serviced by the City.

Future Trends

Little change is anticipated in the manner in which serviced residential building lots are produced over the 1986-2001 period.

CHARACTERISTICS OF THE APARTMENT DEVELOPMENT INDUSTRY

Apartment developers are a diverse group. They include firms that assemble land and construct rental apartment projects for their own portfolios, firms that sell completed rental projects to investors and firms that construct condominium apartment projects for sale to owner-occupants. These firms may be only the initiators of new apartment projects or they can also be involved in the actual construction process as general contractors. Apartment development in some instances is the firm's only business, while other firms are more diversified, building houses and developing land or non-residential projects as well.

Over the postwar period, and particularly since the 1960s, a considerable proportion of apartment development has consisted of social housing projects initiated by government or non-profit organizations. The private housing industry has become involved in these projects either as a general contractor or by providing a turnkey project to a sponsor.[17]

17. Under a turnkey scheme, the developer undertakes the entire operation from the acquisition of land to the completion of the structure and turns over to the sponsor a completed project ready for occupancy.

An Overview of the Apartment Development Industry During the Postwar Period

The size and structure of the apartment development industry has largely been a reflection of underlying market conditions. When demand for new rental apartments was buoyant, the industry expanded to meet this demand. Similarly, when demand contracted, the industry experienced a corresponding contraction.

The industry's output and methods of operation also reflect the dictates of the marketplace. When the ownership of newly built rental apartment projects was financially viable in the late 1950s through to the late 1960s, developers often built for their own portfolio, and a number of very large developer-investor firms emerged. When the ownership of new rental projects became financially unattractive and the federal government promoted tax shelter investment in rental accommodation by individual investors, apartment developers shifted their focus to syndication. With the recent growth of the condominium market, more developers have entered this segment of the apartment market.

Growth of the Apartment Development Industry from the Mid-1940s to the End of the 1960s

From the paucity of references to rental apartment developers in the literature, it is reasonable to infer that although some companies were engaged in developing apartment projects in the mid-1940s, almost all these firms were quite small.

The rental apartment development industry blossomed during the 1955-1969 period. The growth of large firms coincided with the introduction of new technology for high-rise buildings. It was likely not a coincidence that new technology was introduced at a time when a strong demand existed for rental accommodation.

If the 1970s and the first 12 or 13 years after the war were the golden eras for single-family homebuilders, the late 1950s to the late 1960s was the golden era for apartment developers.

Economics of Rental Apartment Construction Progressively Deteriorates

A progressive deterioration in the economics of rental apartment construction ocurred in Canada between the early 1960s and the early 1980s. The deterioration was especially pronounced in the mid-1960s, the mid-1970s and the mid-1980s. A study found a widening gap during the early 1960s to the early 1980s period between actual market rents and the rents required to cover costs on new rental properties and provide a reasonable return on equity. This widening gap was attributed to "the combination of dramatically increased financing and construction costs and constrained market rent increases due to rent controls and government private rental subsidy programs."[18]

The federal government introduced various programs in the last half of the 1970s and the early 1980s to stimulate private rental investment. Several provinces launched programs as well. These initiatives were undertaken, in part, in response to the extension of rent control to all ten provinces as part of the federal government's Anti-Inflation Program in 1975.

Many Established Apartment Development Firms Left the Industry in the1970s

The deterioration in the economics of new rental investment resulted in apartment development firms cutting back on rental production or leaving the industry entirely.

The growth in Cadillac Fairview's rental housing portfolio provides an illustration. The number of units added per year in the mid-1970s amounted to less than 40 percent of the number added a decade earlier. Moreover, while Cadillac Fairview remained a large apartment builder in the Toronto area during the mid-1970s, its focus shifted. For instance, in 1975, the company undertook the construction of two senior citizens buildings on a general contracting basis. Cadillac Fairview also became a major condominium developer during the mid-1970s. By the early 1980s, however, Cadillac Fairview made a corporate decision to completely withdraw from the apartment development and investment business.

18. Clayton Research Associates Ltd, Rental Housing in Canada Under Rent Control and Decontrol Scenarios: 1985-1991, prepared for the Canadian Home Builders Association, 1984.

The Rise and Decline of Rental Apartment Syndicators

Individuals have always been a source of investment funds for new rental housing. Before the income tax reforms introduced in the early 1970s, there were substantial tax advantages for higher income individuals to invest in rental housing, as well as in other types of rental real estate. A number of rental apartment developers constructed projects, mainly small projects, for sale to individual investors.

However, in 1971 this tax advantage, including the deduction of losses by claiming a capital cost allowance (CCA) on a building as a deduction against other income, was removed. The provision allowing the offset of CCA losses against other income was returned to the Income Tax Act in 1974 as the Multiple Unit Residential Building (MURB) provision. The MURB provision was a temporary measure that received various extensions up to 1982.

Since the economics of rental investment were not attractive to the apartment development industry, member firms looked for other avenues of profit. As one interviewee stated, "We couldn't make money building for ourselves, so we turned to the rental market—the high income individual investors."

Several companies became very large by syndicating rental projects to individual investors. Numerous smaller companies across the country also began syndicating projects.

With the ending of MURBs in 1982, many MURB syndicators left the rental apartment development industry, although a few firms continued to sell rental units in Ontario and British Columbia on the basis of potential capital appreciation and so-called "soft" cost deductions.

Apartment Development Industry in the Mid-1980s

Two case studies provide an indication of the state of the apartment development industry in the mid-1980s. Ottawa was an exception to the widespread exodus of firms from the rental apartment development industry after the MURB legislation expired. A few large syndicators continued to develop and market new rental units to individual investors. In addition, one large Ottawa developer (Minto Construction) continued to build rental projects for its own portfolio.

In Toronto, the resurgence in the apartment condominium market in the mid-1980s has led to the emergence of several large firms, the most prominent of which is Tridel. Tridel sold more than twice the number of condominiums of any other firm in 1986. Despite the emergence of larger firms, the condominium marketplace in Toronto is not dominated by these large firms. The top ten companies accounted for just over half the condominiums sold in the Toronto market in 1986.

Future Trends

The market opportunities for apartment developers are expected to be increasingly in the provision of lifestyle living environments, mostly condominium tenure, but with some rental as well. Since these projects are more likely to be undertaken by larger firms, large firms are expected to play a significant role in this industry over the 1986-2001 period.

APARTMENT DEVELOPMENT PRODUCTION PROCESS

Unlike the single-family house, the typical apartment building of the mid-1980s does not appear the same as the apartment buildings constructed immediately after the war. Typical apartment construction changed little until the mid-1950s when, in one decade or so, the increase in the vertical height of apartment structures changed the production process and end product perhaps more than the single-family house has changed in a century. The term *breakthrough* can be applied to the change in the form of apartments. The demands and economic incentives driving this change were clear. The constraints were largely physical rather than building code or jurisdictional as was the case for single-family housing production.

Little Change in the Product or Process in the 1940s and Early 1950s

The apartment buildings constructed during the late 1940s to the early 1950s were predominantly low-rise walk-ups, generally two-and-a-half to three-and-a-half storeys in height. The units were called walk-ups because they were not equipped with elevators.

The materials and techniques used in apartment construction during this period were largely adopted from the single-family homebuilding process, and the changes that occurred in this field were incorporated into apartment construction. Amenities and interior finishes, especially in higher quality apartments, began to parallel those in single-family house construction. By the late 1950s, apartments began to feature broadloom or parquet flooring in living room, dining room and bedroom areas, vinyl-asbestos tile in kitchens and bathrooms, hollow-core wood doors, bi-fold or accordion doors on closets, ample kitchen cupboards, bathroom vanities and so on.

Medium-and Then High-rise Apartments Dominate from the Mid-1950s Onward

Apartment developers began to build up rather than out in response to several influences: the cost of land and services; new demands from municipalities for open space around apartments; the sharply increased demand for rental apartments in or near the inner city; and the increasing complexities, costs and delays in getting land approved for building. By the mid-1950s, for example, medium-rise structures of seven to ten storeys were being constructed in the Toronto market. Through the 1960s, the high-rise structure became the typical form in the Toronto market as well as in other centres across Canada.

The construction of medium-rise apartment structures required the application of materials, designs and building techniques substantially different from those used in walk-up structures. Building codes limited the heights to which timber frame or masonry load-bearing walls and structures could be built. The available alternatives were to use structural steel framing with cast-in-place concrete floors, various materials, including masonry, for in-fill walls and partitions and some form of exterior cladding, or to use cast-in-place concrete to form the structural shell and floors, and again select from various materials for in-fill walls, claddings and finishes.

Since there was no requirement for clear open spans (that is, column-free or bearing-wall-free spaces) in medium-rise apartment construction, and partly due to the familiarity with its materials and processes, reinforced concrete construction emerged as the predominant construction type in medium-rise and later high-rise apartment construction. Since span lengths could be maintained at normal room sizes and design floor loadings were not high, concrete floor

slabs could be of reasonable thicknesses. Through their experience with other forms of buildings and engineered structures, builders were familiar with the installation and support of formwork and the placing of concrete.

Advances in high-rise construction techniques were focused first on the vertical transport of materials and then, with the advances of the mid-1960s, on the vertical transport of labour and the large section formwork of the building. Beginning with medium-rise apartment construction in the 1950s, material hoist towers gained widespread acceptance and use. The earlier versions were generally limited in height to about 27 m (90 feet) and were capable of hoisting a 545 kg (1,200 pound) payload at a maximum speed of 30 m/min (100 feet per minute). This hoist was well suited to medium-rise structures and simplified to a considerable degree the process of moving materials to the various levels. These materials included concrete, masonry products, windows and doors, and various pieces of equipment. In the early 1960s a heavy duty tower was developed, which had a maximum height of 79 m (260 feet) and could carry a payload of 1,815 kg (4,000 pounds) at a speed of up to 79 m/min (260 feet per minute). Again, this tower was only suitable for the movement of materials; work crews still had to climb ladders or temporary stairways to gain access to the work levels.

The combination of three new construction technologies (the tower and climbing construction cranes, the flying form and the "Hi-Rise" hoist tower) afforded the opportunity to apply essentially production line operating and control techniques to apartment construction. The various stages of work, from initial construction to final finishing, could be planned and scheduled on a floor-by-floor basis, with the trades and materials moving reasonably easily from one work site to the next. The result of this organization and control, and the development of the required tools and materials, was a remarkable saving in time and money. As an indication, the on-site labour required to construct walk-up apartments in 1946-1947 amounted to 2,000 person-hours per unit, while higher quality high-rise apartment units were being constructed in about 1,000 person-hours each in the peak period of high-rise production in the mid- and late 1960s.

Efforts to Introduce European Building Systems Failed

Canadian builders and developers were twice enticed by the possibilities of technologically advanced European systems for apartment construction, once in the late 1950s and early 1960s and more strongly at the end of the 1960s.

Toward the end of the 1960s, there was a strong movement ot introduce European building system techniques for apartment construction to Canada, particularly in the Toronto area. The European systems contained higher levels of factory content than traditional North American processes, thus necessitating substantial capital investment for plant and facilities. These European systems were introduced to Canada about the same time as the flying form system, which used climbing cranes and flying formwork to construct buildings. The Canadian flying form system proved less expensive, and the European systems failed to find a sufficient market in Canada.

Future Trends

No major changes are expected in high-rise apartment construction technology before the end of the century.

CHARACTERISTICS OF THE RESIDENTIAL RENOVATION INDUSTRY

The residential renovation industry in the mid-1980s is in many respects at a similar stage of its evolution as the single-family homebuilding industry was in the late 1940s and the apartment development industry was in the early 1950s. Most renovation firms are tiny, a high rate of turnover exists. It is a "master craftsman" industry characterized by close contacts with customers and little in the way of mass production or modern management techniques.

To some observers, renovation is not an industry. Moreover, while renovation in the broad sense is the current growth sector of the housing industry, as is shown in Working Paper One, much of this work is undertaken by property owners themselves (homeowners and landlords) or by special trade contractors who are not considered part of the housing industry for the purposes of this study.

An Overview of the Residential Renovation Industry

The residential renovation industry is the newest sector of the housing industry. While renovation spending expanded rapidly in the early 1970s, it is only in recent years that the firms involved have come to be regarded as an industry.

Up to the mid-1980s, the residential renovation industry has been almost entirely comprised of innumerable small and a few medium-sized firms. The current industry structure reflects th diversity of work that can be classified as renovations and the small size of most renovation jobs. In addition, the geographically dispersed market, the need to maintain close contact with the customer and differing local regulations tend to inhibit the realization of economies of scale.

The Structure of the Industry in the First Half of the 1980s

Information from a variety of surveys provides insight into the structure of the residential renovation industry in the first half of the 1980s.

- Few medium-sized or large renovation firms exist.

Comparatively few medium-sized or large renovation firms exist in Canada. According to Statistics Canada, only 45 firms with revenues of $2 million or more specialized in residential renovation in 1984 — equivalent to only 14 percent of the number of new single-family homebuilders with revenues of $2 million or more.

Typically, renovation firms are small. For example, almost 90 percent of all firms specializing in residential repairs had total revenues of less than $250,000 in 1984.

- More firms are entering the renovation industry.

With the increased demand for residential renovation work, there has been an increase in the number of firms entering the renovation industry, an industry that is relatively easy to enter.

Many new firms in the residential renovation industry are formed by tradespersons or other persons previously involved in some aspect of the construction business. Other principals in the renovation industry include people skilled in architecture or engineering, business management, marketing, finance or design. Smaller firms involved primarily in new home building are also increasingly recognizing the opportunities available in the renovation sector.

- There is a core of established firms.

Despite the ease of entry and exit, the rate of turnover appears relatively low for residential renovation firms. As a result, a core of firms in the business are fairly well established.

- Renovation firms generally operate in one geographic area.

Renovation firms tend to work within limited geographic areas. The necessity of becoming familiar with different municipal regulations and procedures that affect renovation work is one factor behind this, as it is for firms in the new homebuilding industry.

- Franchising is not yet a big business in the renovation industry.

There has been some movement in recent years toward the franchising of renovation firms. The main thrust behind the franchising of renovation firms appears to be an attempt to improve the image of the industry. Guidelines for customer service are established by the franchisor to develop uniformity of service. In return for franchising and monthly fees, a renovator receives assistance with marketing and management.

Given the failure of similar franchising attempts in the past, there is some doubt of the viability of such endeavours. Reasons cited for past failures of renovation franchises have included the inability of the franchiser group to prove to members that joining the group is worth the franchising fees, the problems of keeping members once they become established and getting members to individually reflect the philosophy of the group.

Future Trends

Changes in the residential renovation industry over the 1986-2001 period are expected to be evolutionary in nature and less extensive than those in the single-family homebuilding industry.

■ A continued predominance of small firms is anticipated.

The renovation market over the 1986-2001 period will continue to attract very small firms, many with only one or two persons. The fragmented nature of demand, the need to maintain close contact with the customer and the fact that numerous renovation jobs are small assures a continued role for the small renovator.

■ The growth of larger "boutique" renovators is expected.

While the scope of renovation work is highly diverse, there is a commonality in certain types of work. Bathroom renovations, kitchen renovations, room additions, the creation of basement apartments and extensive landscaping improvements are types of renovations in which firms can specialize, gain in-depth experience and generate some economies of scale. Generally, these specialized firms will increasingly emerge in larger urban markets where the volume of work will justify specialization. These firms are referred to here as boutique renovators.

A number of franchisors of boutique renovators may emerge. Franchisors will have the marketing expertise to entice clients to undertake certain types of renovation work as well as enhance the credibility of the franchisees. It is less likely that chains of boutique renovators, in which each outlet has common ownership, will emerge given the personalized nature of the renovation industry.

These larger boutique renovators will be of sufficient size to qualify for quantity discounts from suppliers. They are also likely to enhance their operating efficiency by adopting computer-based technology for determining customer requirements, cost estimating and job scheduling.

■ There is less prospect of larger "department store" renovators emerging.

Renovation firms can increase in size by specializing in particular types of jobs and gaining a larger market share or by endeavouring to undertake a wide range of renovation activity. Many existing renovators are, in a sense, "jacks of all trades"— they can undertake whatever job the customer wants. These firms are referred to here as department store renovators.

There is a market niche for firms of this type; owners buying an older inner city home, for instance, may want the entire inside of the house gutted and redone. However, it is difficult for such firms to become large-scale operators. Personalized contact between the renovator and the customer is a key facet of this type of operation.

There will be less opportunity for franchising of the department store renovator firms because once these firms have established their reputation, they have little need for incurring the costs of belonging to a franchise. Word-of-mouth is the most important source of business for these firms.

The expected lack of fundamental change in the renovation industry over the 1986-2001 period arises from four factors: the fragmented nature of demand; the need to maintain close contact with customers; the continued restrictiveness of municipal building regulations; and the lack of significant economies of scale.

RESIDENTIAL RENOVATION PRODUCTION PROCESS

The nature of the production process for renovation work is quite different from that of new residential construction. Many jobs are one-off, surprise-ridden, barely plannable and seldom truly repeatable. This situation has changed little over the postwar period.

Three aspects of the renovation production process combine to prevent major advances: the difficulty in attracting skilled labour; the absence of major new technologies; and the need for renovation specialists referred to here as master renovators.

Lack of Skilled Labour

Since renovation work uses sub-trades similar, and at times identical, to those needed for new residential construction, the renovator must compete for the same available labour pool. Sub-trades generally prefer the more controlled and repetitive nature of new construction. In addition, highly qualified and skilled craftsmen are not in plentiful supply. For example, with the broad introduction of manufactured finished and semi-finished products, plasterers and finishing carpenters have become scarce, yet renovations often entail considerable work in these areas.

New Technologies

Technological advances in renovation have been few. Measures to conserve energy in the 1970s resulted in the creation of speciality trades, such as air-sealing contractors and re-insulation contractors. Complementing these speciality trade contractors have been new materials and products, including weatherstripping, add-on plastic glazings and insulations, such as foams and cellulose. With the introduction of prefinished products designed to quicken new home construction came the decline of several products and techniques they replaced, such as plastering. Plastering is well suited to renovation work because older houses often do not have square, level or plane-surfaces, partly because they were originally plastered. The square sheet drywalls and prefinished materials, with all their advantages, are generally difficult to cut and retrofit. Conversely, the renewed interest in rehabilitation has led to the growth of speciality items, such as kitchen cabinet refacing, countertops and plastic millwork that make the job easier for both professionals and do-it-yourself homeowners.

Efforts to introduce large-scale innovations have not achieved much success. Mass production of home renovations is almost a contradiction of terms, and even the mass production of large components has generally proven to be a poor approach to renovation work. Ventures into factory-manufactured add-on rooms, sunspaces and even "in-law flats" have generally encountered unforeseen (albeit often foreseeable, in hindsight) costs, primarily because existing houses offer restricted access, have out-of-square surfaces and have hidden wiring and plumbing.

A Need for Renovation Specialists

Just as the small but highly qualified master builders once dominated new homebuilding, it is becoming increasingly clear that the booming home renovation business could use a new trade — the master renovator — if the quality, reliability and efficiency of renovation work is to be improved. While the master renovator would require carpentry, structural and at least para-electrical skills (and licences), other skills needed would include expanded material and equipment appreciation, estimating, costing and organizational ability.

However, it may be some time before appropriate building codes, standards and inspections are applied to the residential renovation industry.

Future Trends

No major changes are expected tin the residential renovation production process over the 1986-2001 period.

CHAPTER SUMMARY

Highlights of the examination of past and expected future trends in the structure and production processes of the residential land and apartment development industries and the residential renovation industry include the following:

Residential Land Development Industry

- The residential land development industry has undergone a major transformation in many market areas over the postwar period. It has changed from an essentially municipally operated industry to a private sector industry.

- The structure of the land development industry has tended to become more concentrated over the postwar period, though this is not an attribute of every major market area. Generally this concentration does not seem to have reached levels allowing monopolistic behavior.

- The residential land development business has been extremely profitable at times, but is risky.

- The role of larger land development firms is expected to continue to increase throughout the rest of the century.

- The configuration of both the typical residential lot and the subdivision has changed dramatically over the postwar period in an effort to make more efficient use of land.

- Little change is expected in the process by which serviced residential lots are produced over the 1986-2001 period.

Residential Apartment Development Industry

- The size and structure of the apartment development industry over the postwar period have largely reflected underlying market conditions and the degree of involvement of government in the marketplace.

- The apartment development industry has experienced a number of changes over the postwar period, evolving from developers building for their own rental portfolio in the late 1950s to the late 1960s, to rental syndicators active in the late 1970s and early 1980s, to increasing numbers of condominium apartment developers in the mid-1980s.

- The shift in preferences of the housing marketplace to more lifestyle living environments suggests that larger firms will continue to play a significant role in the apartment development industry.

- The characteristics of apartment buildings have broadened over the postwar period, though regional differences exist. Apartment buildings changed from the exclusively walk-up structures of the mid-1940s to late 1950s to more medium-rise structures in the mid-1950s. Since the early 1960s, high-rise structures have become a common form of new apartment accommodation.

- New construction equipment, such as tower cranes, and new techniques, such as flying forms, introduced in the 1960s, contributed significantly to the development of high-rise apartment technology.

- European building systems for apartment construction failed to find a significant market in Canada in the 1960s despite several efforts to introduce them.

- No major changes are expected in high-rise apartment construction technology before the end of the century.

Residential Renovation Industry

- The residential renovation industry is the newest recognized sector of the housing industry. While renovation work has always existed and began to expand rapidly in the early 1970s, only in recent years have the firms involved come to be regarded as an industry.

- In the mid-1980s, the industry almost entirely comprises small and a few medium-sized firms. In many respects, the residential renovation industry is similar in nature to the single-family homebuilding industry immediately after the Second World War.

- It is anticipated that the industry will continue to be characterized by a predominance of small firms over the 1986-2001 period. Growth is expected in larger firms specializing in certain types of work, such as bathroom or kitchen renovations, possibly through franchising organizations. Significantly less opportunity for growth is expected for individual firms attempting to be "jacks of all trades."

- Technological advances in the renovation production process have been few, and no major changes are expected over the 1986-2001 period. The highly qualified skilled labour required for renovation work is in short supply; there appears to be a need for a new trade, the master renovator. Master renovators would be specialists with knowledge of the technology, management and marketing of the renovation business.

CHAPTER FIVE
THE HOUSING INDUSTRY AND CHANGE

The preceding chapters have depicted the housing industry as one that has undergone considerable change over the postwar period. Yet, there is still a widely held perception that the housing industry, particularly the single-family homebuilding and renovation sectors, is, in many respects, backward. The failure of the single-family homebuilding industry to adopt large-scale factory assembly line techniques is often raised to support this view.

THE PROCESS OF CHANGE

Change can occur through applied research and development, through discoveries from the on-going operations of firms and through the importation of ideas, processes and products from other countries. Industries differ in their receptiveness to change and the rate at which change is adopted throughout the industry (diffusion). The origins of change can come from within a company or industry (internal change) or from outside the firm or industry (external change).

There is a role for government in specific circumstances to encourage both the adoption and diffusion of desirable change.

The characteristics of the single-family homebuilding industry suggest a comparatively low rate of responsiveness to and acceptance of change. This conclusion follows from a comparison of the characteristics of the single-family homebuilding industry and its production processes (as documented in Chapters Two and Three) with the characteristics of firms that readily develop and adopt change.

This conclusion appears to conflict with the conclusion of Chapter Two that the single-family homebuilding industry has shown a high capacity for adjusting to the changing marketplace. The latter finding relates primarily to the ability of the industry to expand the number of homebuilding firms, with a shift to larger firms, during times of expanding demand and decrease the number and size of firms when demand contracts. This ability to shift the number and composition of single-family homebuilding firms results from the inherent characteristics of the industry plus the relatively low barriers to entry.

ROOF TRUSSES — AN EXAMPLE OF TECHNOLOGICAL CHANGE IN THE SINGLE-FAMILY HOMEBUILDING INDUSTRY

The process whereby the engineered lightweight wood roof truss (referred to here simply as the roof truss) was developed, initially adopted and eventually universally used illustrates key features of the process and implications of technological change in the single-family homebuilding industry.

Adoption of Roof Truss Technology by the Single-family Homebuilding Industry

The meaningful features of the roof truss story are several:

- The technology had a long gestation period.

A period of about 20 years passed from the time the National Committee on Wood Utilization in the United States first released details of residential roof trusses to the time the modern metal plate connector was introduced in the early 1950s. Throughout this gestation period, improvements were made in the truss, particularly in the truss connector, until the specifications met the needs of the homebuilding industry. The introduction of the metal plate connector was followed by rapid adoption over the ensuing decade. The main breakthrough in Canada was the development of national performance criteria by which the truss design could be evaluated.

- Process need was the stimulus.

Wartime and expected strong postwar demands created pressures for the homebuilding industry to become more efficient; both labour and materials were in short supply. These pressures affected many facets of the homebuilding construction process, with the development and adoption of trusses being the most important. This source of change is referred to as process need.

■ The development of roof trusses was outside the housing industry.

United States federal government agencies played an important role in roof truss research and in creating interest for trusses in the homebuilding industry. Building material manufacturers, often through supporting university research efforts, also played an important role in the late 1940s and early 1950s. Hence, the reaction to the pressures for enhanced efficiency came from outside the homebuilding industry.

■ Canadian builders adopted United States roof truss technology.

The initial designs for lightweight residential roof trusses originated in the United States. Canadian builders became familiar with these trusses through United States trade publications and attendance at United States builder conventions. The truss systems could not be used in Canada without regulatory approval; adaptions were necessary to meet the conservative snowload design requirements of many municipalities.

■ Federal roof truss requirements were ultimately positive for the widespread use of trusses.

While local regulations and CMHC acceptance procedures undoubtedly initially delayed the adoption of roof trusses in Canada, the ultimate result of national truss acceptance criteria for NHA houses was positive. Early on, federal research agencies investigated the load bearing capability of trusses compared to the traditional joist and rafter construction and found the standards applied to trusses were excessive. The agencies formulated truss performance criteria that significantly assisted truss acceptance.

The key was the initiative taken by building scientists and engineers from CMHC, the NRC and the Canadian Forest Products Laboratory, who were willing to challenge traditional methods. They questioned why new trusses that followed standard design principles resulted in a product heavier than acceptable. Innovative testing and evaluation helped develop realistic performance standards for the new technology.

■ Widespread use took a decade or more.

It took a decade from the time roof trusses began to be used in significant numbers until almost every builder across the country was using trusses. However, as traditional roof framing practices were virtually unchanged over the previous 100 years or so, the conversion to roof trusses can be considered remarkably rapid.

Implications for Technological Advancement in the Single-family Homebuilding Industry

A description of one technological advancement cannot claim to be illustrative of all or most technical improvements introduced and adopted by the single-family homebuilding industry over the post-war period. However, the roof truss adoption process is broadly what could be expected given the analysis of the process of change and the characteristics of the single-family homebuilding industry.

The source of change was internal to the housing industry, but the research and product development was outside the industry. The large number of small firms precluded the housing industry from being the initiator.

The process was aided by the prospect of a rapidly growing market for new houses. Although there was some confusion about the patentability of the various truss plate configurations, the designs developed by the manufacturers were covered by copyright laws that protected the engineering investment costs. This protection increased the potential reward to manufacturing firms undertaking development work.

The experience with roof trusses appears to diverge with expectations for technological advancement in general, as outlined in Working Paper Four, in that CMHC and the NRC played a positive role in trusses gaining widespread acceptance. Typically, regulatory bodies have tended to restrain rather than actively promote change.

THE RESPONSE TO PRONOUNCED SHIFTS IN DEMAND — EXAMPLES OF MARKET INDUCED INTERNAL CHANGE IN THE SINGLE-FAMILY HOMEBUILDING INDUSTRY

Changes in homebuilding technology that result in improved efficiency or better quality construction are favourable not only to firms in the housing industry, but also to housing consumers and the economy in general. However, not all change is positive for the housing industry; some changes can be adverse. Notable among these are unexpected and sudden shifts in the demand for new housing, especially downward shifts. Even though the number of single-family homebuilding firms and their composition adjust quickly to pronounced shifts in demand, it should not be inferred that these changes have no adverse consequences.

Sharp declines in demand can result in losses or significantly reduced profits, firms leaving the industry and layoffs of both management and skilled trades personnel, many of whom seek employment in other industries. Similarly, sharp increases in demand, by increasing profits, attract new firms into the housing industry, including entrepreneurs and labour who may have only limited housing experience, thus potentially resulting in a lower level of quality. Increases in demand can put severe pressure on available supplies of labour and materials, causing input prices to accelerate. These higher input costs may become part of the cost structure even when demand softens.

The Single-family Homebuilding Industry's Response to Pronounced Shifts in Demand

Two pronounced shifts in the demand for new houses exemplified the response of the single-family homebuilding industry and the resulting consequences on overall economy and the housing market: the sharp decline in demand throughout the country during the severe 1981-1982 economic recession; and the upsurge in demand in Ontario, particularly in the Toronto area, from 1985 to early 1987.

The review of the two case studies led to a number of findings:

- The industry structure responds quickly to sharp shifts in demand.

The single-family homebuilding industry has exhibited a remarkable flexibility to sudden demand shifts, both upward and downward. The number of firms expands or contracts, and existing firms grow or diminish in size in response to changing levels of demand. Some firms diversify into related areas in adverse times, while other entrepreneurs sense a future opportunity and get into single family homebuilding when market conditions are still negative.

- Housing cycles influence the structure and operational methods of the single-family homebuilding industry.

The characteristics of the single-family homebuilding industry are partly due to the periodic and irregular pronounced shifts in demand. A flexible structure, with firms investing little in off-site facilities for large-scale factory-like operations, and the reliance on labour from special trade contractors are elements of this operational flexibility.

- Adjustments by the construction labour and land markets and by building material manufacturers are much slower.

While the single-family homebuilding industry appears to adjust fairly readily to sharp shifts in demand, this is not the case for the construction labour and residential land markets or building product manufacturers. When demand falls, special trade contractors lay off workers. The workers, cushioned by unemployment insurance, await the call to return to work. However, if the downturn is prolonged, some workers accept jobs in other industries that have less instability. When demand returns, as it did in Ontario in the 1985 to early 1987 period, the supply of labour responds sluggishly to the demand. Workers must be persuaded to leave the jobs they took during the downturn and return to construction; this persuasion takes time, as does attracting unemployed workers from other geographic jurisdictions.

Similarly, the supply of serviced residential land cannot be increased immediately in response to a sudden rise in housing demand. Depending on the existing supply of land and the supply of land in the approval process, it can take from a few months to several years to generate a significant increase in the supply of serviced residential lots.

Manufacturers respond to a downturn by cutting back inventories and production. Although they can readily cut back their labour supply, they must underuse plant and equipment. When demand returns, manufacturers hire back workers and add extra shifts to increase production. However, output is limited by existing plants and equipment. Expansion of plants and adding new equipment can be a time- and capital-consuming process.

- A sudden surge in demand can lead to permanently higher labour and material costs for builders.

During labour shortages, as experienced in Ontario from 1986 to early 1987, builders bid up the price of labour. Where the industry is highly unionized, these higher costs become reflected in wage rate settlements. Yet, when demand turns down, wages are seldom reduced in response to the weakness in demand. Only under severe and prolonged adverse market conditions, as in Alberta in the early 1980s, do construction wage rates decline. The usual experience has been for the rate of increase to slow down only in adverse times.

Manufacturers, particularly in industries characterized by a few large producers, also increase prices in response to rising demand, but are reluctant to reduce prices when demand declines. Depending on the structure of the industry and the nature of the downturn, many manufacturers try to maintain prices by reducing output.

The result is a ratcheting up of costs to builders. In times of rising demand, prices rise, but in times of falling demand, costs do not fall back to pre-boom levels.

- Builders become more cognizant of buyers' preferences in times of slow demand.

Homebuyers benefit from a buyers' market by being able to obtain housing products close to what they desire. To sell new houses, many builders spend more time discovering what the buyer wants and making design changes accordingly. In boom times, as the Toronto experience clearly shows, the buyer has little choice but to take whatever builders offer.

CHAPTER SUMMARY

Highlights of the examination of change in the single-family homebuilding industry include the following:

- Single-family homebuilders on their own are unlikely to pursue or adopt positive technological change with any degree of vigour. The nature of the industry, which is a consequence of the nature of the housing product and its market environment, is the reason for this apathy. This is not to imply the industry will not respond forcefully and positively to technological change, but that it generally requires outside encouragement and support.

- The single-family homebuilding industry has shown a high capacity for quickly adjusting to changes in its marketplace through the expansion in the number and size of firms during times of increasing demand and the contraction in the number and size of firms during times of contracting demand.

- The analysis suggests there is a role for government, particularly at the senior levels, to work with the single-family homebuilding industry, encouraging and supporting changes that are to the mutual advantage of both. The areas of joint interest include the following:

— Government financial and related support would stimulate the search for and adoption of new or improved ideas, processes and products in the construction and land development sectors. This could be justifiable on economic grounds if the social benefits generated by change are sizable compared to the costs.

— Government can moderate cyclical instability at the national level or within the various regions, causing positive repercussions on the single-family homebuilding industry.

— Another area for potential government initiative is construction labour mobility. Given the nature of the construction industry, workers should be highly mobile both geographically and between construction sectors; however, geographic labour mobility in the mid-1980s has been sluggish.

— A final government initiative would be to examine all aspects of the housing regulatory environment in its broadest sense. The goal of such an exercise would be to eliminate unnecessary negative regulations and restructure the regulatory environment to be more conducive to the introduction of new ideas, processes and products, while not neglecting broad public policy concerns.

CHAPTER SIX
THE HOUSING INDUSTRY AND THE ECONOMY

In times of a substantial backlog of demand or strong demographic pressures, such as high levels of migration from rural to urban areas or a large increase in the number of young adults, housing production has been an important contributor to overall economic growth. Conversely, when demand circumstances are less favourable, the economic importance of housing lessens. This relationship applies equally to the effectiveness of the housing sector as a channel for federal monetary and fiscal policy.

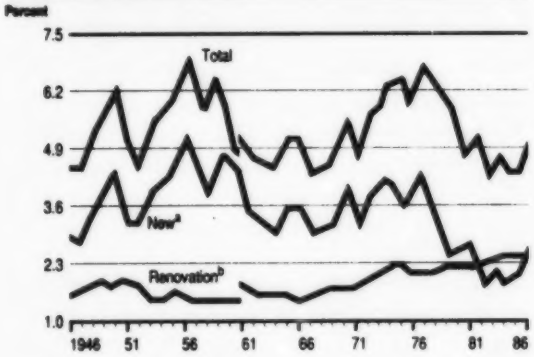
TOTAL RESIDENTIAL CONSTRUCTION ACTIVITY

Real spending on total residential construction accelerated rapidly during the first three decades after the Second World War.

Total construction spending in 1986 amounted to $27.8 billion, almost six times the real spending 40 years earlier. As a proportion of the country's Gross Domestic Product (GDP), the value of residential construction ranged between 4 and 7 percent over the postwar period. (See figure 8.) The highest shares were recorded in the mid-1950s and much of the 1970s, when residential construction expenditures accounted for between 6 and 7 percent of total GDP. While the upsurge in housing starts caused the share to rise to 5.5 percent in 1986, it had remained at approximately 5 percent the previous three years, about the same share as in the mid-1960s.

The decline in the share of GDP accounted for by total construction expenditures since the mid-1970s has been in new construction. In contrast, the share of GDP accounted for by residential renovation expenditures has increased from about 1.5 to 2.0 percent in the years before the mid-1970s, to 2.6 percent in 1986.

Figure 8. Residential Construction Expenditures as a Percent of Gross Domestic Product (GDP), Canada, 1946-1986



Source: Working Paper Three, p.4.

Note: There is a break in the time-series data in 1961.

[a] Excludes supplementary and land costs.

[b] Includes repairs; repairs for the 1946-1952 period are estimates.

NATIONAL EMPLOYMENT IMPACT

The total economic impact of residential construction, as in other economic activities, is significantly larger than its immediate direct expenditures. Using job creation as an indicator, the total economic impact of residential construction includes — in addition to jobs created in the construction industry — jobs created in ancillary industries providing materials and services to construction activity (indirect impact) and jobs generated as a result of the spending of incomes from the direct and indirect jobs created (induced impact).

Residential construction spending in Canada in 1986 resulted in the creation of slightly more than one million person-years of employment throughout the Canadian economy in 1986 and beyond. (See table 8.) Of this employment, approximately 30 percentwas generated in the construction industry and 70 percent in other industries, principally manufacturing, trade and services. Thus, for every construction industry person-year of employment created by total residential construction expenditures, about 2.3 jobs were generated in other sectors of the economy.

Renovation construction expenditures have a larger economic impact than spending on new housing because the former is more labour-intensive, assuming the renovation is undertaken by contractors and not by homeowners.

Table 8. Employment Impact of Total Expenditures on New Residential Construction by Industry, Canada, 1986

Industry	Thousands of Person-Years			
	Direct	Indirect	Induced	Total
Construction[a]	318.3	2.5	8.4	329.2
Manufacturing	0.0	135.1	81.1	216.2
Transportation, communication and utilities	0.0	26.1	42.2	68.3
Trade	0.0	53.5	143.5	197.0
Finance, insurance and real estate	0.0	12.7	39.4	52.1
Service	0.0	40.0	98.7	138.7
Other:				
Agriculture	0.0	2.4	33.1	35.5
Forestry	0.0	7.6	1.0	8.6
Fishing, hunting and trapping	0.0	0.1	0.7	0.8
Mining, minerals and related	0.0	3.0	1.7	4.7
Total	**318.3**	**283.0**	**449.8**	**1,051.1**

Source: Working Paper Three, p. 6.

[a] Primarily the housing industry plus special trades employment.

REGIONAL EMPLOYMENT IMPACTS

Since residential construction activity uses considerable on-site labour, a large component of the economic impact remains in the area where the construction takes place. Of the direct, indirect and induced jobs created by residential construction, the proportion remaining in the province in which the construction is undertaken ranges from 45 percent in Prince Edward Island, Newfoundland and Saskatchewan to 81 percent in Ontario.

By definition, the province in which the residential construction work is undertaken is the recipient of the entire direct employment impact. The indirect and induced impacts are spread much more widely. For Ontario, and to a lesser degree Quebec, most of the total employment impact of residential spending remains in the province. For the remaining provinces, a sizable proportion of the total employment generated by residential construction spending in the province flows to Ontario (20 to 25 percent of the total) and, again, to a smaller extent, Quebec.

Thus, it appears the total economic benefits arising from residential construction spending in any province are positively related to the degree of diversification of the province's economic base.

CYCLICAL AND SEASONAL INSTABILITY

Cyclical instability refers to variations around a long-term trend and has been of particular concern to the housing industry over the entire postwar period. While cyclical instability is not unique to the housing industry, it has been much more pronounced in this industry than in the economy as a whole. This largely results from the heavy dependence of the housing industry on borrowed funds and, hence, its vulnerability to changes in interest rates.

The cyclical pattern of residential construction activity has changed over the postwar period. For most of the first 25 years of this period, housing tended to be counter-cyclical, that is, residential construction activity moved in the opposite direction to the economy at large; over the past 15 years, the pattern has been more pro-cyclical. The measures undertaken in the late 1960s to integrate the mortgage market with the overall capital market appear to have been a major contributor to this change. Renovation spending has exhibited much less cyclical volatility than new construction, particularly since the mid-1970s.

The housing industry has also been characterized by instability related to changes in the climate and the seasonality of demand. Work put in place is traditionally much lower in the first quarter of the year and somewhat lower in the second quarter than the final two quarters. Contrary to popular perception, new residential construction activity has not been characterized by reduced seasonal instability, at least not since the early 1960s; in fact, there has been a slight decline in the proportion of annual new residential construction work undertaken in the first quarter. Renovation spending is even more seasonal than new construction.

HOUSING AND STABILIZATION POLICY

There are arguments both for and against the use of the housing sector to promote the stabilization of the overall economy. The arguments for promoting stability in housing output include increased efficiency, lower prices and reduced bankruptcies in the housing industry. Conversely, it is argued that the housing sector is highly suitable as an economic stabilization tool, since stimulation of this sector has generally translated quickly into employment throughout the country, with little leakage to other countries through the purchase of imports. Over the postwar period, monetary policy has undoubtedly had the greatest impact on the cyclical behavior of the housing sector, followed by housing initiatives generally aiming to protect housing from periods of instability in the overall economy. General fiscal policy has had much less impact.

The success of specific counter-cyclical housing initiatives of the federal government has been mixed. The direct lending programs launched by CMHC at various times between the late 1950s and early 1970s appear to have had both stabilizing and destabilizing consequences. The Canadian Home Ownership Stimulation Plan (CHOSP) introduced in mid-1982, during the worst economic downtown since the 1930s, had positive short-term repercussions on housing starts, though there is evidence the program was in effect longer than necessary to achieve its stabilization objective. A unique program aimed at stimulating renovation spending in 1982-1983 — the Canada Home Renovation Plan (CHRP) — had fewer economic spin-offs than CHOSP due to the much smaller amount of private investment stimulated per dollar of subsidy.

It would appear that the federal government will be less likely to rely on the housing sector to stimulate the economy than in the past; current public policy, which is supported by the private sector, is to avoid such use of the housing sector. This policy is due to the reduced economic importance of housing and the apparently relatively small economic impact associated with subsidies to the increasingly important renovation sector. However, the housing sector still has a number of stabilization advantages. In addition, it may well be possible to design programs to stimulate renovation spending that would have a considerably larger positive economic impact than CHRP.

CHAPTER SUMMARY

Highlights of the economic role and impact of the housing sector include the following:

- The importance of the housing sector in the overall economy in the 1980s is less than it has been during much of the postwar period, particularly during the decades of the 1950s and 1970s.

- Residential renovation work undertaken by contractors has a much larger on-site labour component than new residential construction. However, this employment impact is offset in part by less spending on building materials, which generates fewer off-site jobs in manufacturing and other industries.

- Residential construction work in one province has positive economic repercussions in most other provinces to varying degrees.

- The housing sector has been characterized by cyclical instability over the entire postwar period, though the pattern has shifted within the past 15 years from generally being counter-cyclical to being pro-cyclical.

- Contrary to popular perception, new residential construction activity has not been characterized by reduced seasonal instability, at least not since the early 1960s.

- There are arguments both for and against using the housing sector to promote economic stabilization in the overall economy. Current public policy, which is supported by the private sector, is to avoid such use of the housing sector.

CHAPTER SEVEN
CONCLUSIONS

This study examines the characteristics and production processes of the housing industry and its four components — single-family homebuilders, residential land developers, apartment developers and residential renovators. It highlights the history of the housing industry in the 40 years after the Second World War and how the industry is expected to change from the mid-1980s to the end of the 1990s. From this exhaustive review arise several conclusions of interest to decision makers in both the housing industry and various levels of government.

■ The nature of the housing industry is the creation of its product and market environment.

The housing industry, in particular the single-family homebuilding and renovation sectors, is characterized by the conspicuous absence of very large firms operating on a national basis. However, the structure of the industry does vary by market area.

The existence of a large number of small firms in the single-family homebuilding and renovation sectors reflects the ease of entry into the industry that prevailed over the entire postwar period, the fragmented nature of housing demand and the fact that the housing product is tied to specific sites.

Structural differences between market areas reflect in large part local market differences, such as variations in land ownership patterns or in the regulation of the building and land development processes.

The fact that on-site construction is still a primary characteristic of the housing construction process is largely a reflection of the market environment and the resulting industry structure.

■ The housing industry is highly responsive to changes in market conditions, but much less so to technological change.

The housing industry's inherent structure has proven highly adaptable to changes in its marketplace through times of expansion and contraction. However, these same attributes contribute to a lack of vigour in most firms in the housing industry in the pursuit and adoption of desirable technological change.

■ Advances in the housing industry over the past 40 years have been the result of a strong partnership between the private sector and government.

At the federal level, the role of CMHC has been central to the development of a modern housing industry. This relationship was especially critical in the early postwar years, when the industry was still in the adolescent phase of its development.

A reliance on the private sector and the powerful incentive of the profit motive, guided by government through building codes and regulations, has provided Canada with one of the highest standards of housing in the world. The federal government and, increasingly, provincial governments have used the private market to produce housing in the quantity and types affordable to a broad spectrum of Canadians. Governments have occasionally exercised a stabilizing role during times of economic difficulty.

Governments have established the framework for the provision of quality housing, but generally have not built the housing. In addition to creating the framework for the functioning of the private market, governments in Canada have played a significant role in financing housing for low-income people whose housing needs are not usually met by the private market. In such cases, the private sector generally constructed the housing.

■ The housing industry is in a state of transition.

The housing industry will not need to produce as many new housing units as it has in the past unless population growth trends change dramatically through substantial increases in immigration. While the markets for new housing are expected to shrink, they will also become more discrete. The housing industry must develop enhanced capabilities to identify and cater to these newly emerging markets, which include a diversity of lifestyle housing forms.

Similarly, the housing industry must develop the capability to respond to the emerging economic importance of the renovation sector. As the century comes to a close, much of the country's housing stock will require upgrading. This presents the opportunity for a great deal of labour-intensive work, which, to a considerable extent, could replace that lost through the expected decline in new construction. Upgrading will also entail the development of an industry with a different mix of skills from that required for new construction. In many ways, renovation activity poses challenges similar to those faced in the early postwar years, when a great need existed to stimulate the production of large volumes of low-cost new housing.

■ Land supply is the most complex factor of production.

Servicing residential land is the only production factor in the homebuilding process not directly responsive to market forces. The price mechanism works only indirectly in the land market. The provision of trunk services to developing areas is largely a function of municipal and provincial governments, while the planning and development of new subdivisions occurs principally in the private sector.

Although landowners and developers are enticed to bring more developments to the market when demand and profit expectations are high, they cannot do so unless the trunk services are already in place and without the extensive cooperation of municipalities and, often, provincial governments in the review and approval of their plans. Typically, the actions of municipalities are not directly responsive to the signals of the price mechanism. Hence, the municipal response to rising demand for serviced residential land tends to lag behind the response of private-sector landowners and developers.